COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE
VETERINARY BULLETIN

Vol. 23] September, 1953 [No. 9

DISEASES CAUSED BY BACTERIA AND FUNGI

CHODKOWSKI, A. (1953). Rozprzestrzenienie paciorkowcowego zapalenia wymion u krów w Polsce. [**Incidence of streptococcal mastitis in Poland.**]—*Méd. vét., Varsovie.* **9**, 7-10. [In Polish. English and Russian summaries. Abst. from English summary.] **2444**

The results of herd sampling were that out of 5313 bovine udders 29% were infected with *Str. agalactiae* and 5% with staphylococci. Out of 303 herds, 44% were infected with *Str. agalactiae*.—R.M.

INNES, A. G. (1953). **An enrichment broth and differential medium for the isolation of mastitis organisms from the milk of distant herds.**—*J. comp. Path.* **63**, 136-142. **2445**

A medium containing glucose, lithium chloride, potassium tellurite and bromocresol purple was used to facilitate the isolation of streptococci and *Staph. aureus* from milk samples sent in for laboratory examination from distant herds. The samples required were milked directly into bottles containing this medium.—R.M.

FEY, H. (1953). Unsere Erfahrungen mit dem CAMP-Test zur Differenzierung von Streptococcus agalactiae. [**Use of the CAMP test in differentiating** *Str. agalactiae.*] — *Schweiz. Arch. Tierheilk.* **95**, 247-254. [English, French and Italian summaries.] **2446**

The CAMP test was applied to 384 strains of streptococci. Out of 200 strains of Group B known to be *Str. agalactiae,* 198 were CAMP positive. Three strains not belonging to Group B were also positive. This test proved to be much more reliable for the differentiation of *Str. agalactiae* than suger fermentation tests.

—R.M.

PLASTRIDGE, W. N., WILLIAMS, L. F., EASTERBROOKS, H. L., WALKER, E. C. & BECCIA, R. N. (1951). **Vibriosis in cattle.**—*Bull. Storrs agric. Exp. Sta.* No. 281. pp. 54. **2447**

The authors listed 64 world references to vibriosis. Their bacteriological methods of diagnosis were based on results obtained with 148 positive foetuses and they advocated serological and vaginal mucus agglutination tests for herd diagnosis. Serum tests on 25 herds over a period of 5 years revealed the transient nature of the presence of antibodies. Difficulty in maintaining a suitable stock culture for antigen production was overcome by lyophilization.

The addition of antibiotics to semen used for artificial insemination was discussed and mention was made of an inconclusive vaccination experiment.—IAN NEWSAM.

GALLUT, J. (1952). Recherches immunochimiques sur *Vibrio foetus.* I.—Étude sérologique préliminaire de 10 souches d'origines diverses. II.—Fractionnement chimique des corps microbiens et étude sérologique de deux fractions antigéniques. [**I. Serological study of ten strains of** *Vibrio fetus.* **II. Serological study of antigenic fraction of** *V. fetus.*]—*Ann. Inst. Pasteur.* **83**, 449-454 & 455-463. **2448**

I. Using 10 strains of *V. fetus,* 4 from man and 6 from animals, immune sera were prepared in rabbits and tube agglutination tests carried out. All strains produced sera with titres of 1:2,000 to 1:10,000 against the homologous organism. Cross-agglutination tests suggested the presence of 6 antigens. Each of the 10 strains had a different antigenic structure and no single antigen was common to all of them, nor was there any relation between antigenic structure and species of origin.

II. Two antigenic fractions were isolated

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

from the 10 strains by treatment with phenol. One was probably polysaccharide in nature and represented the specific antigenic structure of the strains, having the heterogeneous character of the somatic antigen. The other fraction was soluble in phenol, probably of protein nature, and was common to all 10 strains of *V. fetus*.—E. G. WHITE.

ERCEGOVAC, D. & RAZMILIĆ, R. (1951). **[Immunity in sheep after vaccination with "Kabete" anthrax vaccine.]**—*Acta vet., Belgrade.* **1,** 76-93. [In Serbian. Abst. from German summary.] **2449**

Two spore vaccines were examined, one prepared from the Kabete strain, the other from a non-capsulating strain. Both gave a solid immunity for from 4 days to 16 months after vaccination, but whereas the Kabete vaccine could be injected with safety s/c, the non-capsulating strain vaccine was safe only when injected i/d.—R.M.

BELLER, K. (1951). Tuberkulose als Seuche und als Infektionskrankheit. **[TB. as an epidemic and as an infection, in man and animals.]**—*Dtsch. med. Wschr.* **76,** 778. **2450**

A conventional article. B. found that goats which become infected with bovine type tubercle bacilli can spread the infection to other goats in a herd. He did not consider that there were any reliable reports in the literature of mixed infection with different types of tubercle bacilli in human beings and had never been able to demonstrate the presence of more than one type in any case of animal TB. —F.E.W.

FROMM, G. & WIESMANN, E. (1953). Der mit offener Tuberkulose behaftete Mensch als Ansteckungsquelle für Rind und Ziege. Infektionen mit Tuberkelbakterien des typus humanus. **[Open TB. in man as a source of infection for cattle and goats. Infections with human type tubercle bacillus.]** —*Schweiz. Arch. Tierheilk.* **95,** 69-97 & 135-170. [English, French and Italian summaries.] **2451**

In 9 herds previously tuberculin negative, the occurrence of reactors was caused by infection with the human type of *M. tuberculosis*. In another herd, the infection was introduced by a man infected with the bovine type. Case-histories and procedures for diagnosis, tracing the source of infection, and control were described in detail. The subcutaneous, ophthalmic and intradermal (i/d) tuberculin tests, using human tuberculin, were employed. The i/d test was the most reliable. Three calves and 4 goats were experimentally infected by inhalation of cultures obtained from affected cattle, and the human type was recovered from them. —R.M.

KERBY, G. P. & CHAUDHURI, S. N. (1953). **Plasma levels and the release of a lysozyme-like enzyme from tuberculin exposed leukocytes of tuberculous and non-tuberculous human beings.**—*J. Lab. clin. Med.* **41,** 632-636. **2452**

No difference was found in the effect of either tuberculin or staphylococcal toxin on leucocytes from tuberculous and non-tuberculous subjects. The activity of a lysozyme-like enzyme in the plasma was greater in tuberculous subjects than in non-tuberculous subjects. —R.M.

I & II. BJÖRNESJÖ, K. B. (1952). **On the effect of human urine on tubercle bacilli. IV. Some attempts to concentrate and purify the tuberculostatic factor. V. Experiments with the tuberculostatic factor purified from urine.**—*Acta tuberc. scand.* **27,** 116-122; 123-133. [In English. For previous parts, see *V.B.* **22,** 1966-1968.] **2453 & 2454**

III. BJÖRNESJÖ, K. B. (1952). **On the occurrence of tuberculostatic substances in bovine organ extracts.**—*Ibid.* 134-139. [In English. Abst. from author's summaries.] **2455**

I. Using chromatographic techniques on charcoal and Al_2O_3 columns, combined with electrodialysis, the activity of a tuberculostatic factor from human urine was increased about 70 times. The active substance was found to be an acid, probably of a cyclic nature.

II. The factor was bacteriostatic and bactericidal, especially with decreasing pH, but less so in the presence of blood serum and whole blood. It was slightly more active against an attenuated B.C.G. strain than against human, bovine and avian type strains tested. At much higher concentrations the factor inhibited a pneumococcus and *Pseudomonas pyocyanea*.

III. There appeared to be a close relationship between a factor extracted with water at pH 6–7 from bovine spleen, liver, lung and muscle and the factor from human urine described above [I & II].—F.E.W.

SOLTYS, M. A. (1953). **An anti-tuberculous substance in tuberculous organs.**—*J. comp. Path.* **63,** 147-152. [Author's summary modified.] **2456**

A substance which inhibits tubercle bacilli was demonstrated in tuberculous lymph nodes of cattle and in the spleen and liver of tuberculous g. pigs and rabbits. Tubercle bacilli treated

with these extracts for four days failed to produce lesions in g. pigs and failed to render the animals sensitive to tuberculin. The organisms were not killed, however, since sub-inoculations of spleen and liver from these animals produced local lesions in 3 months. If treated bacilli were washed with saline the protective action of the extract was removed.

FLETCHER, F., EPSTEIN, C. & JEWELL, P. I. (1953). **The antimycobacterial activity of tissue extracts and surface-active agents in Dubos' medium.**—*J. gen. Microbiol.* **8,** 323-329. [Authors' summary modified.] **2457**

Purified tissue enzyme preparations, particularly bovine pancreatic deoxyribonuclease, inhibited specifically pathogenic strains of *Mycobacterium tuberculosis*. Destruction of the enzymic activity did not influence this effect. Inhibition in Dubos' medium was markedly increased by Tween 80 but not by other surface-active agents. Tween 80 alone or combined with the tissue extracts facilitated the action of antibiotics. The antimycobacterial activity of spermine was confirmed, but there was no evidence that it was present in the extracts used; the inhibitory substance was not identified.

ARTIOLI, D. & GIANELLI, F. (1952). Isolamento di una "Candida" patogena da un caso di granuloma di Roeckl. [**Isolation of Candida sp. from an intramuscular nodule in a cow.**]—*Arch. Vet. Ital.* **3,** 485-497. [English, French, German and Spanish summaries.] **2458**

From a Roeckl's granuloma observed in a 10-year-old cow the authors isolated a species of *Candida* which proved to be pathogenic for calves and lab. rodents. On i/m injection into a young heifer it caused the formation of nodules with a histological structure comparable with the initial stage of a Roeckl's granuloma.—I. MARTINI.

DIMOCK, W. W. (1952/53). **Johne's disease: environment and management. I—General considerations. II—Control and prevention.**—*Vet. Med.* **47,** 443-447 & 48; 43-47 & 60. **2459**

I. A short popular account, with brief references to differential diagnosis, methods of spread and incubation period. It is suggested that the period of incubation in animals that first become infected as adults is shorter than for calfhood infection.

II. A general account of prevention and control on the farm. Cattle trucks and infected animals are the sources of introduction of the infection. Isolation of suspected animals, use of high mangers (avoid "sweep-in" mangers), proper disposal of dung, and separation of calves from adults help to prevent spread.

—E. G. WHITE.

KATIĆ, V. R. (1951). [**The action of streptomycin on** *Erysipelothrix rhusiopathiae*.]—*Vet. Glasnik.* **5,** 465-480. [In Serbian. French summary.] **2460**

K. reported that when streptomycin was added to a suspension of *Erysipelothrix*, agglutination occurred; 0·01–0·3 g. in 10 ml. of suspension was bactericidal and 0·01–0·001 g. was bacteriostatic. In tests on infected mice the estimated bactericidal dosage proved toxic, but a smaller dosage continued for 6–9 days was effective.—I. MARTINI.

TRBIĆ, B. (1951) [**Effect of sulphadiazine on** *Erysipelothrix rhusiopathiae*.]—*Vet. Glasnik.* **5,** 481-486. [In Serbian] **2461**

The addition of 4–12 ml. of 1% sulphadiazine (sodium salt) to 6 ml. broth culture of *E. rhusiopathiae* did not arrest its growth.

When administered orally (0·25–0·5 ml. of the 1% dilution), it neither prevented nor cured *E. rhusiopathiae* infection in mice.

—I. MARTINI.

HEIN, H. (1953). Über bakteriologische und tierexperimentelle Untersuchungen mit Listeria monocytogenes Pirie. [**Research on** *Erysipelothrix* (*Listeria*) *monocytogenes*.]—*Zbl. Bakt. I.* (*Orig.*) **159,** 170-172. **2462**

A discussion on the literature.

—J. E. SMITH.

OLSON, C., JR., DUNN, L. A. & ROLLINS, C. L. (1953). **Methods for isolation of** *Listeria monocytogenes* **from sheep.**—*Amer. J. vet. Res.* **14,** 82-85. **2463**

Tissue was suspended in tryptose broth, added directly to a tissue grinder, and incubated in the grinder itself. Other methods were not so successful.—G. B. S. HEATH.

MIKEŠ, J. (1951). Použití sulfaguanidinu při tlumení cholery drůbeže. [**Sulphaguanidine treatment in fowl cholera.**]—*Spisy Vysoké Školy Vet.* **19,** No. 179. pp. 1-59. [Russian summary.] **2464**

Fowls infected orally with *Past. septica* and treated after varying time intervals with sulphaguanidine, could be saved provided the drug was given within 24 hours after infection. The value of sulphaguanidine for prophylaxis was demonstrated in field trials.

—A. MAYR-HARTING.

LEWIS, M. L. (1953). **Fatal meningitis with septicemia caused by *Pasteurella multocida*.** —*Amer. J. clin. Path.* **23**, 241-245. [Abst. from author's summary.] **2465**

L. reported a fatal case of septicaemia and meningitis in a human being, caused by *Pasteurella septica*. This was believed to be the first reported case in the U.S.A. proved bacteriologically.

FUSILLO, M. H., ROMANSKY, M. J. & KUHNS, D. M. (1953). **Further investigations on cross resistance as well as studies on induced sensitivity to the antibiotics.**—*Antibiot. & Chemother.* **3**, 35-40. [Abst. from authors' summary.] **2466**

Twenty-four strains of Gram-positive and Gram-negative organisms were tested. Upon exposure to aureomycin or terramycin certain strains tended to develop resistance simultaneously to both of these antibiotics. Cross resistance between aureomycin, chloramphenicol, and terramycin occurred with *Bacterium aerogenes*, less frequently with *Bact. coli*, and rarely with the Gram-positive organisms.

Exposure of the Gram-positive bacteria to aureomycin, chloramphenicol, or terramycin did not increase the sensitivity of these organisms to penicillin.

With the exception of one strain of *Bact. coli*, exposure to chloramphenicol, aureomycin or terramycin failed to produce increased sensitivity to streptomycin.

GILLISSEN, G. (1953). Der Coli-Milzbrand-Antagonismus. [**Bact. coli—B. anthracis antagonism.**]—*Zbl. Bakt. I. (Orig.)* **159**, 187-198. **2467**

B. anthracis soon disappeared from mixed cultures with *Bact. coli*, apparently inhibited by a filtrable enzyme or enzymes produced only as a result of direct contact between the two organisms.—J. E. SMITH.

KRIEGER, U. & KRIEGER, H. (1953). Beitrag zur Therapie der Colimastitis. [**Treatment of mastitis caused by *Bacterium coli*.**]—*Tierärztl. Umsch.* **8**, 71-73. **2468**

In vitro tests and treatment of 40 cows having 43 quarters affected with acute *Bact. coli* mastitis were carried out to compare the value of "Masticillin C" (penicillin-streptomycin mixtures in oil or ointment), "supronal" (emulsion of sulphonamide preparations, Marbadal and Debenal M), and aureomycin ointment (6%). The first was unsatisfactory. The second was effective after 2–4 injections into the affected quarter and milk yield was normal within 3 weeks. Aureomycin was effective after one or two treatments and milk yields were restored 4–8 days sooner than with supronal.

—E. G. WHITE.

KÖHLER, H. (1951). Das sog. Koligranulom der Hühner. [**The so-called *Bact. coli* granuloma of fowls.**]—*Exp. VetMed.* 5, pp. 75-94. **2469**

In 2,583 P.M. examinations of poultry the *Bact. coli* granuloma described by HJÄRRE & WRAMBY was found 95 times, most commonly in the liver and intestine—kidney, skin, lungs, and spleen being affected less frequently. *Bact. coli* was the organism isolated from most of the lesions. *S. enteritidis* Gärtner was isolated from one typical case from which *Bact. coli* was absent. Experimentally, *Bact. coli* strains, particularly mucoid ones, yielded the typical picture, but not if given orally. Whereas Hjärre & Wramby suggest that infection occurs from the genital tract, K. considers that it occurs from the portal circulation from the intestinal foci; the primary enteritis remains unexplained, but is possibly of parasitic origin.

—A. MAYR-HARTING.

MAHAFFEY, L. W. (1952). *Salmonella typhimurium* **in foals in Western Australia.**—*Aust. vet. J.* **28**, 8. **2470**

Three out of 8 newly weaned foals in a thoroughbred stud died of salmonellosis. Clinically there was fever up to 106° and 107°F., anorexia, hyperpnoea, and a profuse watery diarrhoea. The course of the illness in one foal extended over 7 days, but the other 2 died 36 and 48 hours respectively, after the onset of symptoms. These two hyperacute cases showed abdominal pain.

At autopsy there was a very intense haemorrhagic typhlitis and colitis with enlargement of the regional lymph nodes. *S. typhimurium* was isolated from the heart, the liver and the colic lymph nodes.

Penicillin and sulphaguanidine were used in the first case before the bacteriology of the condition was known. They were ineffective, as was chloromycetin in a hyperacute case.

—K. G. JOHNSTON.

NARDI, E. & DE PINTO, F. (1952). Aborto ovino da *S. abortus ovis* e da *Br. melitensis* nelle Puglie. [**Abortion in sheep caused by *S. abortus-ovis* and *Br. melitensis* in Apulia, Italy.**]—*Zooprofilassi.* **7**, 559-565. **2471**

A general note on abortion in sheep in Apulia, caused by *S. abortus-ovis* and by *Br. melitensis*, with emphasis on the need to utilize laboratory methods to distinguish between these two infections.—I. MARTINI.

BOTTS, C. W., FERGUSON, L. C., BIRKELAND, J. M. & WINTER, A. R. (1952). **The influence of litter on the control of Salmonella infections in chicks.**—*Amer. J. vet. Res.* **13**, 562-565. [Authors' summary modified.] 2472

S. pullorum and *S. gallinarum* disappear from old built-up litter more rapidly than they do from new "cob" litter. *S. pullorum* in the concentrations present in the litter in these experiments did not cause pullorum disease in New Hampshire chickens when exposed as day-old chicks. When litter was sprayed with *S. gallinarum* and 6-week-old chicks introduced after 48 hours, the mortality rate was lower among the chicks on old built-up litter than in those on new "cob" litter.

BIGLAND, C. H. & PAPAS, G. (1953). **Experiment in egg penetration by salmonella.**—*Canad. J. comp. Med.* **17**, 105-109. 2473

S. typhi-murium, S. oranienburg, S. kentucky and *S. bareilly* were employed to infect the shells of market grade eggs which were then held at room temp. Penetration was noted from the 7th to the 16th days after infection. The percentage of eggs so infected with these species was respectively 8, 3, 19, and *nil*. The authors discussed the possibility of shell disinfection of eggs to prevent penetration.

—R. GWATKIN.

LANG, K. (1952). Versuch einer Wertigkeitsbestimmung flüssiger Nährsubstrate zur Anreicherung von Salmonellen. **[Evaluation of liquid enrichment media for *Salmonella* cultures.]**—*Zbl. Bakt. I. (Orig.)* **157**, 565-576. [English, French and Russian summaries.] 2474

L. used inocula consisting of known varying proportions of *S. dublin* and *Bact. coli* in tests of enrichment media. Bierbrauer's tetrathionate medium was the most efficient.

—A. MAYR-HARTING.

VAN DRIMMELEN, G. C. (1953). **A herd with unexplained serological reaction to *Brucella abortus*.**—*J. S. Afr. vet. med. Ass.* **24**, 13-24. [Author's summary modified.] 2475

Low titre, serologically positive brucella agglutination reactions were found in a herd of 600 to 900 open range cattle without a significant increase of the abortion rate.

Bacteriological evidence of infection could not be obtained. Seasonal exacerbation and recession of reactions were found to coincide with calving (summer) and early pregnancy (winter) seasons. No immunity against exposure to virulent infection could be demonstrated. Abortions observed bore no relation to the reactions found. Two cases of *Vibrio fetus* infection were diagnosed; one case reacted but the other was negative to the agglutinin test.

BARNER, R. D., OBERST, F. H. & ATKESON, F. W. (1953). **The use of dead Strain 19 vaccine to differentiate vaccinal from infection titers of brucellosis (*abortus*) in cows.**—*J. Amer. vet. med. Ass.* **122**, 302-304. 2476

A vaccine was prepared by killing Strain 19 *Br. abortus*. It was used in 49 cows to differentiate between infection and vaccinal titres, by means of a characteristic rise of titre within 17 days after injection.—IAN NEWSAM.

SIMONS, S. A., STEVENS, I. M. & REEVES, W. C. (1953). **Some epidemiological observations on tularemia in California 1927-1951.**—*Amer. J. trop. Med. Hyg.* **2**, 483-494. [Authors' summary modified.] 2477

A study of 266 authenticated cases of tularaemia in human beings in California occurring from 1927-51 showed that 81% were contracted from wild rabbits. The jack rabbit appears to be more frequently involved than the cottontail, in contrast with the findings of other writers in Eastern America. Other wild animals found infected were several species of ground squirrels and field mice, and in a few cases the brown rat. Infected arthropods found in California are chiefly ticks, although the role of rabbit fleas deserves further study, and possibly that of deerflies and horseflies.

KLINGER, K. (1953). Über die Gemsblindheit und ihre Beziehungen zur Konjunktivo-Keratitis infectiosa und zur Brucellose der Rinder und Schafe. **[Blindness in chamois and its relation to infectious kerato-conjunctivitis and brucellosis of cattle and sheep.]**—*Schweiz Arch. Tierheilk.* **95**, 201-228. [English, French and Italian summaries.] 2478

Blindness in chamois, associated with conjunctivitis and keratitis, is a widely distributed contagious disease in the Swiss, Austrian and German Alps. Affected animals, being blind, may be killed by accidental falls, and many are shot as a disease control measure. Cattle and sheep in those areas have also become infected. K. concluded that the disease is a form of *Brucella* infection. The strain isolated differed from *Br. abortus* and *Br. melitensis* in its cultural and serological characteristics. Mice, g. pigs, rabbits, and 2 cattle were infected with material from 76 affected chamois eyes.—R.M.

SIMMONS, G. C. & HALL, W. T K. (1953). **Epididymitis of rams. Preliminary studies on the occurrence and pathogenicity of a**

brucella-like organism.—*Aust. vet. J.* **29,** 33-40. **2479**

An organism with the general characteristics of the *Brucella* group was isolated from the epididymes but not from the testes of two rams. Injections were made with cultures of this organism into the testes and epididymes of 4 rams. Lesions were produced and the organism was re-isolated at P.M. examination. Neither of two rams, inoculated by instilling the organism into the prepuce developed lesions, but the organism was recovered from the epididymis of one of them. Rams exposed to infection by subcutaneous, intravenous, supraconjunctival or the oral routes were not affected. The organism was recovered from 9 of 30 abattoir specimens. Of these, 9 had lesions in one or both epididymes. The histopathology of natural and induced ovine epididymitis consisted of a chronic inflammation with hyperplasia of the epithelium, often accompanied by chronic orchitis.—D. F. STEWART.

BOINO DE AZEVEDO, M. J. (1952). Espiroquetose bovina em Portugal. [*Borrelia theileri* **infection in cattle in Portugal.**]—*Rev. Med. vet., Lisboa.* **47,** 1-5. **2480**

Some cases of haemoglobinuria in cattle were found in a herd, in the province of Alentejo. Blood samples were taken and the organism identified as *B. theileri.*

The author gave some details of the effect of the parasite on the health of a host.

—F. A. ESTEVES.

LEVADITI, C., VAISMAN, A. & HAMELIN, A. (1952). Les immobilisines actives à l'égard du *Spirochaeta gallinarum.* [**Immobilizing antibodies for** *Borrelia anserina.*]—*Ann. Inst. Pasteur.* **83,** 260-262. **2481**

Immobilizing antibodies for *Borrelia anserina* and bodies causing a partial lysis of the parasites were demonstrated in the serum of affected fowls which had been treated and had recovered.—J.D.

VAN DER HOEDEN, J. (1953). **Leptospirosis among goats in Israel.**—*J. comp. Path.* **63,** 101-111. [Author's summary modified.] **2482**

An account of an outbreak of leptospirosis in goats in Arab villages in Israel. Considerable losses (44% in one instance) occurred although the infection sometimes remained inapparent. The clinical features were similar to those seen in cattle in Israel. Increases in agglutinins to *Leptospira grippo-typhosa,* the organism isolated from the goats, were detected in goats, sheep, cattle, and other species.

The author described the experimental disease set up in hamsters, g. pigs, mice, field rodents, goats, sheep, also a cat, dog and calf.

ZIMA, L. (1951). Leptospirosis icterogenes suis. [*L. icterohaemorrhagiae* **infection in pigs.**]—*Spisy vys. Školy Vet., Brno.* **19,** No. 184. pp. 1-11 (245-255). [English and Russian summaries.] **2483**

Leptospira were demonstrated by silver impregnation in the organs of pigs that had died with jaundice in a piggery. Surviving pigs examined serologically some months later yielded high titre agglutination reactions with *L. icterohaemorrhagiae,* although they had never shown any symptoms of that infection. Of a total of 74 further sera tested, from pigs sent to various slaughterhouses in Moravia or Bohemia, 18·9% reacted at 1 : 1000 or over and 74·1% at 1 : 100 or over. The true percentage of infected pigs is probably much lower as the sera examined were not from a true cross-section of the pig population.—A. MAYR-HARTING.

SCHLOSSBERGER, H. & LANGBEIN, H. (1952). Übertragung von *Leptospira icterohaemorrhagiae* durch *Ornithodorus moubata.* [**Transmission of** *L. icterohaemorrhagiae* **by** *O. moubata.*]—*Z. ImmunForsch.* **109,** 366-370. **2484**

Ornithodoros moubata transmitted *L. icterohaemorrhagiae* from artificially infected to healthy g. pigs. The organisms lived for at least 39 days in the tick, and were present in its eggs.—R.M.

NISSEN, K. (1949.) Leptospirosis canicola. Erstmaliges Auftreten des Canicolafiebers im Landkreis Minden i.W. [*L. canicola* **infection in man.**]—*Med. Mschr.* **3,** 908-911. **2485**

An account of a case of *L. canicola* infection in a farm worker who had been in contact with an infected dog.—H. BEHRENS.

KRAPF, W. & BRUNNER, K. T. (1953). Ein Fall von Leptospirosis Pomona mit Augenentzündung beim Pferd. [*L. pomona* **infection with ophthalmia in a horse.**]—*Schweiz. Arch. Tierheilk.* **95,** 255-257. [English, French and Italian summaries.] **2486**

L. pomona infection was diagnosed in a farm labourer. Soon afterwards a horse on the same farm developed a febrile illness accompanied by ophthalmia from which, with penicillin and streptomycin treatment, it recovered after 18 days. *L. pomona* agglutinins were present in the blood of the horse, the titre at the 18th day being 1 : 10,000. On serological evidence, pigs were the source of infection.—R.M.

ROSSI, P. & TOUMEYRAGUES, J. (1953). Pénicillinothérapie et gangrènes gazeuses en pathologie bovine. **[Penicillin therapy of gas gangrene (blackleg) in cattle.]**—*Rev. Méd. vét.* **104,** [Feb.] 75-84. **2487**

The authors described the successful treatment of blackleg in 2 cattle by means of penicillin and antiserum, with or without streptomycin.—G. P. MARSHALL.

SUTTON, G. D. (1953). **The association of enterotoxaemia (pulpy kidney) with other diseases of sheep.**—*J. S. Afr. vet. med. Ass.* **24,** 31-32. [Author's summary modified.] **2488**

A description of 4 cases in which enterotoxaemia was associated respectively with "Geilsiekte" [hydrocyanic acid poisoning], Rift Valley Fever, trichostrongylosis and bluetongue. S. discussed the possible significance of these diseases in the aetiology of enterotoxaemia.

HOBBS, B. C., SMITH, M. E., OAKLEY, C. L., WARRACK, G. H. & CRUICKSHANK, J. C. (1953). *Clostridium welchii* **food poisoning.** *J. Hyg., Camb.* **51,** 75-101. [Abst. from authors' summary.] **2489**

A report of an investigation of outbreaks of mild food poisoning apparently caused by heat-resistant strains of *Cl. welchii.* The outbreaks were characterized by colic and diarrhoea without vomiting, commencing 8–20 hours after ingestion of the contaminated food. The strains of *Cl. welchii* concerned were only feebly toxigenic, and apart from the heat-resistance of their spores, and some colonial characters, fitted well into *Cl. welchii* Type A. The toxin production and serology of the strains were uniform within an outbreak.

Mild food poisoning similar to that seen in natural epidemics was produced in volunteers by cultures of heat-resistant *Cl. welchii* isolated from contaminated meat.

Infection is almost invariably caused by meat which has been boiled, steamed, braised, stewed or insufficiently roasted, allowed to cool slowly, and eaten the next day, either cold or reheated.

Meat should be cooked immediately before consumption, or, if this is impossible, cooled rapidly after cooking and kept refrigerated until the time of consumption.

It should never be allowed to cool slowly after cooking, since this is favourable to the rapid growth of *Cl. welchii.*—A.S.

MIKLAUŠIĆ, B., ZAHARIJA, I. & AUDI, S. (1951). Epizootija spinalne i bulbarne paralize (botulizma) konja na jednom poljoprivrednom dobru. **[*Clostridium botulinum* intoxication in horses.]**—*Vet. Arhiv.* **21,** 554-571. [In Croat. French summary.] **2490**

An account of an outbreak in horses in Croatia considered on clinical grounds to be botulism. Twenty-one of a stud of 35 horses were affected. Details are given of the illness.

—I. MARTINI.

SALISBURY, R. M., ARMSTRONG, M. C. & GRAY, K. G. (1953). **Ulcero-membranous gingivitis in the sheep.**—*N.Z. vet. J.* **1,** 51-52. **2491**

This condition was associated with an infection with *Fusiformis necrophorus* and responded to treatment with penicillin.—G. B. S. HEATH.

VERGE, J. & CAUCHY, L. (1952). La réaction à l'histoplasmine chez le cheval. **[The histoplasmin test in the horse.]**—*C.R. Soc. Biol., Paris.* **146,** 657. **2492**

The authors tested 36 horses from various sources in France for reaction to histoplasmin prepared from *H. capsulatum.* All reacted negatively.—A.S.

TUCKER, R. & MILLAR, R. (1953). **Outbreak of nocardiosis in marsupials in the Brisbane botanical gardens.**—*J. comp. Path.* **63,** 143-146. [Authors' summary modified.] **2493**

A report of an epizootic caused by *Nocardia* spp. amongst marsupials kept in captivity.

The organism appeared to be penicillin sensitive, *in vitro;* nevertheless, the response of the animal to penicillin was disappointing. The literature on *Nocardia* infection was discussed, with emphasis on the difficulties in accurate identification of the organisms.

MARKHAM, F. S. & WONG, S. C. (1952). **Pleuropneumonia-like organisms in the etiology of turkey sinusitis and chronic respiratory disease of chickens.**—*Poult. Sci.* **31,** 902-904. **2494**

A note on the relationship of the lesions that occur in these two conditions to those produced by pleuropneumonia-like organisms, and on the cultivation of the organism.

—F. T. W. JORDAN.

BRYANT, M. P. & BURKEY, L. A. (1953). **Cultural methods and some characteristics of some of the more numerous groups of bacteria in the bovine rumen.**—*J. Dairy Sci.* **36,** 205-217. [Authors' summary modified.] **2495**

Methods were described for cultural counts and the isolation and determination of some characteristics of some of the more numerous groups of bacteria in the rumen of cows. Samples of rumen contents were diluted in an anaerobic dilution solution, mixed in a Waring

blendor to disperse the bacteria, and cultured in an anaerobic agar culture medium containing minerals, rumen fluid, glucose, cellobiose, cysteine and carbonic acid-sodium bicarbonate buffer system. The morphology, Gram reaction, motility, relations to oxygen, and ability to produce hydrogen sulphide, to liquefy gelatin, to hydrolyze starch and cellulose and to produce acid from glucose, xylose, and cellobiose were determined for each of 896 strains of bacteria isolated.

Colony counts of rumen contents from animals on normal rations averaged 1·7 billion bacteria per ml., or about 8·4% of the total bacteria present, as determined by direct microscopic methods.

Almost all bacteria cultured were strict anaerobes, the exceptions being facultative anaerobes of the genus *Streptococcus*.

Some characteristics of 13 of the different groups of anaerobic bacteria isolated from 10^{-8} or higher dilutions of rumen contents were described.

Many of the group of bacteria isolated required carbonate in the culture medium before growth was obtained and several groups did not grow well unless rumen fluid was included in the medium.

EDWARD, D. G. ff. (1953). **A difference in growth requirements between bacteria in the L-phase and organisms of the pleuropneumonia group.**—*J. gen. Microbiol.* **8,** 256-262. [Abst. from author's summary.] **2496**

The L-phase of *Proteus vulgaris* grew in media from which serum had been omitted and to which a phospholipid fraction from egg yolk was added. The L-phase of *Str. moniliformis* grew in the above media when bovine albumin was added. Organisms of the pleuropneumonia group would not grow in either medium unless cholesterol was added.—R.M.

JANSEN, B. C. (1952). **The occurrence of *Eperythrozoon parvum* Splitter, 1950 in South African swine.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 5–6. [Author's summary modified.] **2497**

The presence of *E. parvum* in a splenectomised pig at Onderstepoort was recorded.

Preliminary studies on the transmission of the organism suggested that *Haematopinus suis* may be a vector.

See also absts. **2678** (inhibition of tubercle bacilli); **2729-2730** and **2733** (reports, U.S.A.); **2734** (book, chemical microbiology).

DISEASES CAUSED BY PROTOZOAN PARASITES

TRUMIĆ, P. (1952). **[Treatment and prevention of dourine by antrycide.]**—*Acta Vet., Belgrade.* **2,** No. 2. 23-36. [In Serbian. French summary.] **2498**

One subcutaneous injection of 6–8 mg. of antrycide methyl sulphate per kg. live wt. protected rats only for 10–20 days against a subsequent infection with *T. equiperdum*. Two injections given with a 21-day interval protected them for more than 3 months.

Infected rats, dogs and g. pigs were cured and remained parasite-free after a single injection of 5–7 mg. of antrycide methyl sulphate per kg. live wt.—I. MARTINI.

DE JESUS, Z. (1951). **Studies on the control of surra. V. Experiments on surra transmission.** —*Natural appl. Sci. Bull.* **11,** 191-207. **2499**

T. evansi was transmitted by feeding surra meat or blood to dogs and rats, and, through the agency of the common housefly, *via* bruised tissue, wounds and needle punctures. Infection was also set up by swabbing surra blood on to the normal mucous membranes of the nose, conjunctiva and vagina and on the unsheathed penis of the dog.—S. F. M. DAVIES.

KRANEVELD, F. C. & MANSJOER, M. (1952). Onderzoekingen over de gevoeligheid voor surra. II. Het verloop der ziekte bij enkele in het wild levelde dieren in Indonesië. **[Study on susceptibility to surra. II. Course of the infection in wild animals in Indonesia.]** —*Hemera Zoa.* **59,** 117-146. [English, French and German summaries.] **2500**

The following animals were experimentally infected with *T.evansi*:—*Macaca irus mordax, Axis axis, Rusa timorensis* subspec. *russa, Muntiacus, muntjak muntjak, Paradoxurus hermaphroditus javanicus, Herpestes javanicus, Felis (Prionailurus) bengalensis javanensis, Lepus nigricollis, Sciurus nigrovittatus* and *Rattus rattus argentiventer*. As the course in *Macaca, Axis* and *Rusa* was chronic, it was suggested that they can function as natural reservoirs.

—C. A. VAN DORSSEN.

BURDIN, M. L. (1953). **Examination of three new trypanocidal phenanthridinium compounds for evidence of delayed toxicity.**—*Vet. Rec.* **65,** 241-244. [Author's summary copied *verbatim*.] **2501**

Three new phenanthridinium compounds,

homologues of dimidium bromide with ethyl, allyl and propyl groups substituted for the methyl groups at position 10, were tested for toxicity in bovines. Each compound was injected subcutaneously at 1, 2 and 3 mg. per kg. using two animals at each dosage level. No evidence of delayed toxicity attributable to these substances was detected in any animal, or in six controls, while animals dosed simultaneously at the same levels with dimidium bromide produced the characteristic toxicity syndrome at 2 and 3 mg. per kg. In a further trial, 19 animals were injected with the ethyl compound up to 4 mg. per kg. and again no evidence of toxicity was noted in any animals or in untreated controls, whereas mild toxicity was produced by dimidium bromide used simultaneously at 2 and 3 mg. per kg.

MOHIUDDIN, A. (1952). **An investigation into the relationships between the species (parasitic in man) of the genus *Leishmania* Ross, 1903. I. A study of the cultural characters and morphology with a statistical analysis of the relative measurements of the various species.**—*Indian J. med. Res.* **40,** 7-23. **2502**

In view of the unsatisfactory classification of the genus *Leishmania,* M. investigated the exact relationship between the species of the genus. N.N.N; N.N.N. with Shortt's modification; Wenyon-Noguchi; Row's and Senekie's media were tried and N.N.N. proved to be the most satisfactory. Contamination of the cultures was checked by adding 1000 units of penicillin per ml. to the condensation fluid.

In cultures, *L. tropica* and *L. donovani* showed distinct clumping which consisted of symmetrical rosettes in the former and large tangled masses of flagellates in the latter. Morphologically the various species were indistinguishable. Statistical analysis of the measurements of *L. tropica, L. chagasi* and *L. brasiliensis* could not differentiate between the strains but this was possible by using linear discriminant function.—G. L. SHARMA.

SPINDLER, L. A., SHORB, D. A. & HILL, A. B. (1953). **The role of trichomonads in atrophic rhinitis of swine.**—*J. Amer. vet. med. Ass.* **122,** 151-157. **2503**

Nasal or caecal washings from rhinitic and non-rhinitic swine were instilled into the nasal cavity of piglets varying in age from 5 to 26 days. At P.M. examination 14–58 days later atrophy of the turbinates was found in all 7 piglets inoculated with washings containing trichomonads, irrespective of whether these were obtained from normal or rhinitic swine. No abnormalities of the turbinates were seen in 5 piglets inoculated with nasal washings stored for 30 days at refrigerator temp., in 6 piglets inoculated with physiological saline or in one uninoculated contact. Five photographs were included.—J. T. DONE.

SZAFLARSKI, J. & STEFFEN, J. (1952). Trichomoniaza u ptaków. **[Avian trichomoniasis.]** —*Méd. vét., Varsovie.* **8,** 486-489. [In Polish.] **2504**

The authors described cases of trichomoniasis in fowls and turkeys caused by *Tr. columbae,* the detailed morphology of which was described. The incubation period appeared to be 6–15 days, the symptoms being loss of appetite, difficulty in breathing, rise of temp, and diarrhoea. In the early stages of the disease differential diagnosis is difficult. Young birds are more susceptible and mortality varies. Demonstration of the organism from the mucosa of the caeca in fowls and turkeys and from the upper respiratory passages in pigeons is therefore essential. A biological test can be made on g. pigs. There is no specific treatment and the authors were unable to cultivate the organism.—J. R. MITCHELL.

LOTZE, J. C. (1953). **The identity of *Eimeria arloingi* and *E. faurei* of sheep and goats.**—*Proc. helminth. Soc. Wash.* **20,** 55-58. **2505**

A review of the literature on the occurrence of *Eimeria* in sheep and goats. *E. arloingi* and *E. faurei* are distinct and may occur in both sheep and goats.—JAS. G. O'SULLIVAN.

HUFF, C. G. (1950). **Observations on the pre-erythrocytic stages of *Plasmodium relictum, P. cathemerium,* and *P. gallinaceum* in various birds.**—pp. 15. Bethesda, Md.: Naval Medical Research Institute, National Naval Medical Center. Project NM 005 048.01.01. **2506**

An account of a search for pre-erythrocytic and erythrocytic stages in 15 parasite-host combinations. No clear relationship was found between the ability of sporozoites to develop in the host's tissues and the systematic classification of the hosts.—S. F. M. DAVIES.

MILLER, J. G., LEVY, H. E., TORBERT, B. J. & OGLESBY, W. T. (1953). **The treatment of anaplasmosis in Louisiana with aureomycin and terramycin.**—*J. Amer. vet. med. Ass.* **122,** 390-392. **2507**

Most cases were treated too late for effective results. Where aureomycin or terramycin was administered in the early stages of anaplasmosis, the recovery rate was higher than in untreated cattle. For exact assessment of the value of these antibiotics in anaplasmosis, further work was necessary.—R.M.

PEARSON, C. C. & BROCK, W. E. (1953). **Further studies on the use of aureomycin in anaplasmosis carrier infection.**—*N. Amer. Vet.* 34, 408-412. [Authors' summary slightly modified.] **2508**

The data presented here indicate that a total of 47·5 g. of aureomycin hydrochloride, given i/v in 5 divided doses 12 hours apart to a 1,100-lb. anaplasmosis carrier cow, modified *Anaplasma marginale* to the extent that it was prevented from producing anaplasmosis on subinoculation for 30 to 60 days. However, following this initial period, anaplasmosis could be produced by subinoculation into susceptible animals, but in a mild form on the first subinoculation. Further serial passage through a second animal resulted in some increase in the severity of the resulting anaplasmosis.

HAMADA, S. (1951). **[A case of natural infection of toxoplasmosis in a dog.]**—*J. Jap. vet. med. Ass.* 4, 339-342. [In Japanese.] **2509**

A 6-month-old sheep dog died after 20 days' illness with inappetence, vomiting, diarrhoea and skin rash. On P.M. examination, miliary necrosis was found in the lung, liver and kidney. Microscopic examination of smears from these viscera and from the spleen revealed 5 forms of *Toxoplasma*.—KOGI SAITO.

FRENKEL, J. K. (1953). **Host, strain and treatment variation as factors in the pathogenesis of toxoplasmosis.**—*Amer. J. trop. Med. Hyg.* 2, 390-415. [Author's summary modified.] **2510**

F. discussed the pathogenesis of toxoplasmosis under the headings of host, micro-organism, treatment and time, in an attempt to integrate the many factors operating during infection. The obligate intracellular development of *Toxoplasma*, its ability to grow in many cells and the formation of a relatively inert cyst are the major micro-organismal attributes determining pathogenesis. Whereas many natural hosts appear relatively resistant to many of the strains, the inability of some hosts to overcome infection or to develop an effective immunity and, furthermore, the presence of an infection-immunity (premunition), the development of hypersensitivity with chronic infection and the results of cyst rupture are the major host factors complicating pathogenesis.

Our knowledge of the shifting relative importance of each factor while infection progresses is inadequate. It has been shown that identical inocula can result in infections running a different course in different hosts, and how similar inocula of different strains or the institution of chemotherapy can alter the course of infection.

JACOBS, L. (1953). **The biology of *Toxoplasma*.**—*Amer. J. trop. Med. Hyg.* 2, 365-389. [Author's summary copied *verbatim*.] **2511**

Information on the biology of *Toxoplasma* has been summarized. Lack of host specificity, together with morphological and immunological criteria, indicate that the toxoplasms of different hosts, avian and mammalian, are the same species, *T. gondii*. The manifestations of strain differences are discussed and data are presented on latent infections and immunity. An analysis of present information relative to transmission is given.

BARBARO, A. D'A. (1951). Influenza di alcune vitamine liposolubili sull'accrescimento delle popolazioni ciliate del rumine, in vitro. **[Action of fat-soluble vitamins on the ciliates of the rumen.]**—*Atti Soc. ital. Sci. vet.* 5, 478-484. [English and French summaries.] **2512**

Protozoa were unaffected by vitamin D_3, and by vitamin A at levels up to one million I.U. per 100 ml. rumen contents *in vitro*. At 2·5 million I.U. vitamin A significantly reduced their number in 3 hours and killed them all in 24 hours. Vitamin E at 50 mg. and 100 mg. increased survival time from 72 to 96 hours and 250 mg. increased it to 196 hours. The action of the high vitamin doses may be to prevent a shift in pH to lethal degrees of alkalinity.

—K. J. SINCLAIR.

See also absts. **2594** (*Babesia* infection in cattle); **2682** (effect of magnamycin on protozoa); **2703** (trichomoniasis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

WELLS, K. F. (1953). La fièvre aphteuse au Canada. **[Foot and mouth disease in Canada.]**—*Bull. Off. int. Epiz.* 39, 180-184. **2513**

The origin of the outbreak, its diagnosis and the measures taken to eradicate it were outlined. For disinfection 2% sodium hydroxide was used. Rigorous control measures were enforced and restocking was not permitted until experimental calves and young pigs had been housed on infected premises for at least 60 days and had failed to develop the disease.

—G. V. LAUGIER.

KATALINIC, H. (1953). Vaccination anti-aphteuse en Yougoslavie. **[Vaccination against foot and mouth disease in Yugoslavia.]**—*Bull. Off. int. Epiz.* 39, 175-179. [Abst. from English summary.] 2514

The 1949-50 epidemic in Yugoslavia was successfully controlled with Swiss or Danish vaccines. The 1951-52 epidemic was shown by foreign laboratories to be due to O and A virus. Research by Yugoslav laboratories revealed only type A. Bivalent vaccines from Denmark and Switzerland were ineffective whilst homologous vaccines prepared in Yugoslavia were fully effective. K. advocated international control of vaccine production.—G. V. LAUGIER.

VITTOZ, R. (1953). La fièvre aphteuse en Asie. **[Foot and mouth disease in Asia.]**—*Bull. Off. int. Epiz.* 39, Nos. 1-2. pp. 233-246. 2515

The author gave details of the distribution and evolution of F. & M. disease throughout Asia together with its epidemiology, and described control measures as they exist in various Asiatic countries. Adequate control measures present problems dependent on political situation, finance, administration and religious beliefs. The recommendations of the International Conference at Karachi were listed.

—G. V. LAUGIER.

GEIGER, W. (1953). Les vaccins adsorbés pendant l'épizootie de 1951-1952. **[The use of adsorbed vaccines in the foot and mouth disease epizootic of 1951-52.]**—*Bull. Off. int. Epiz.* 39, 70-78. 2516

G. gave details of the use of monovalent, bivalent and trivalent vaccines during the 1951-52 epizootic. All gave good results in officially controlled experiments and in the field. It was shown that there is a close immunological relationship between the variants A_4 and A_5. Adsorbed vaccines were found to remain fully viable after 21 months, but immunity varied from 2 months to 2 years.—G. V. LAUGIER.

FRENKEL, H. S. (1953). **Research on foot-and-mouth disease. On the use of bovine tongue epithelium imported from countries free of foot-and-mouth disease virus for practical scale cultivation *in vitro* of this virus.**—*Bull. Off. int. Epiz.* 39, 137-139. [In English.] 2517

F. described the technique employed in the collection, packing and transporation of tongue epithelium from the U.S.A., gave details of subsequent serial passage and titration experiments and discussed the problems arising out of the large-scale importation of epithelium.

—G. V. LAUGIER.

I. THOMAS, J.-A. (1952). Procédé général de culture des virus en très grande abondance, chez l'animal. **[Mass cultivation of foot and mouth disease virus.]**—*C.R. Acad. Sci., Paris.* 235, 518-520. 2518

II. THOMAS, J.-A. (1953). La production du virus aphteux. **[The production of foot and mouth disease virus.]**—*Bull. Off. int. Epiz.* 39, 108-114. 2519

I. T. outlined the general principles of a method of cultivating viruses in very large quantities. Embryonic tissue removed aseptically from a foetus is macerated, diluted and implanted s/c or in the abdominal cavity of a susceptible animal of the same species, giving rise to an oedematous mass termed an "embryoma". The virus to be cultivated is then inoculated either into the oedematous mass itself or by the usual routes. In course of time [period not stated] the entire mass is removed and is used for the preparation of vaccine. T. stated that virulent virus can thus be obtained in practically unlimited quantities from a single animal. The method was applied by T. and his co-workers [II infra] to the cultivation of F. & M. disease virus for vaccine production in Brazil. [See also *V.B.* 23, 1883 and II *infra*.]

II. T. discussed the problems associated with virus production on a large scale and methods of production *in vitro* together with their disadvantages. He outlined his own method of injecting cows with calf embryo epithelium to provoke a massive local reaction [*V.B.* 23, 1883]. This is said to produce a pure virus as opposed to the Belin method. Efforts are now being made to produce a stable vaccine in dehydrated form.—G. V. LAUGIER.

WALDMANN, O. & NAGEL, H. C. (1953). Sobre el valor del virus murinizado para la preparación de vacunas contra la fiebre aftosa. **[Mouse-passaged virus in preparation of foot and mouth disease vaccine.]**—*Gac. Vet. B. Aires.* 14, No. 81. pp. 3-9. [German summary.] 2520

The authors give details of tests, in cattle 12–16 months old, of 3 series of vaccines prepared with aluminium hydroxide from the carcasses of infected unweaned mice. The tissue extracts were stated to have had a titre of at least 10^{-6} in mice and varying amounts were used in the preparation of the vaccines so that a constant dose of 20 or 30 ml. of vaccine contained the extract of 0·25, 0·5, 1·0 or 2·0 g. of tissue.

Eleven out of 12 cattle receiving a vaccinating dose containing the 2 smaller amounts, and 5 out of 17 cattle receiving a dose containing

the 2 larger amounts, developed secondary lesions when challenged with bovine virus about 3 weeks after vaccination. Seven of those receiving the 2 larger amounts failed to develop primary lesions, the remaining 5 developed primary lesions but no secondary lesions. These results were not considered to be good enough to warrant the use of unweaned mice as a source of antigen in the preparation of vaccines for cattle.

Tests of cattle sera collected before vaccination and at the time of challenge of immunity were carried out in mice by means of a passive immunization test or serum-virus neutralization test. A rough correlation between immunity in the cattle and specific antibody in the serum was demonstrated.—H. H. SKINNER.

BELIN, C. (1953). Le vaccin anti-aphteux Belin. **[The Belin foot and mouth disease vaccine.]**—*Bull. Off. int. Epiz.* **39**, 103-107. **2521**

A detailed description of B.'s method of vaccine production, and of tests for sterility innocuity and efficacy. B. discussed its characteristics. It is thermostable, easy to manufacture on a large scale and bivalent and trivalent vaccines can be produced.—G. V. LAUGIER.

WILLEMS, R. & LEUNEN, J. (1953). Essais d'immunisation trivalente O-A-C. **[Attempted simultaneous immunization against types O, A and C of foot and mouth disease virus.]**—*Bull. Off. int. Epiz.* **30**, 57-64. **2522**

The authors described the composition of a trivalent vaccine containing O, A_5, and C antigens. Trials with 7 such vaccines gave encouraging results and further work was contemplated with larger doses of antigen. It was postulated that such vaccines would give a good basic immunity.—G. V. LAUGIER.

RUSKA-MENZE, C. (1951). Über Grösse, pH-Stabilität, Titrierung und Reinigung des neurotrop modifizierten Meerschweinchen-B-Stammes des Maul- und Klauenseuche-Virus. **[Size, pH-stability, titration and purification of modified neurotropic g. pig foot and mouth disease virus of type B (French type A).]**—*Exb. Vet.-Med.* **4**, 21-40. **2523**

There were no differences in size between neurotropic and dermotropic strains of virus after ultrafiltration, but the pH-stability varied. The titre of neurotropic strains could be determined by the differences in incubation periods after inoculation of different doses.

—H. BEHRENS.

RANDRUP, A. (1952). **Ultracentrifugation of the virus of foot-and-mouth disease. I. Experiments for the determination of the sedimentation constant of the virus. II. Studies on the complement fixing antigen.**—*Acta path. microbiol. scand.* **31**, 385-401 & 402-409. [In English.] **2524**

R. described experimental work showing the possibility of determining the sedimentation constant of F. & M. disease virus. He described similar work with the complement-fixing antigen.—G. V. LAUGIER.

BIELING, R. (1951). Bläschenerkrankungen tierischer Herkunft beim Menschen. **[Foot and mouth disease in man.]**—*Dtsch. med. Wschr.* **76**, 1152-1153. **2525**

A general discussion of literature on F. & M. disease and vesicular stomatitis (of horses and cattle) in human beings, with 9 references. B. stated that the virus of F. & M. disease had been recovered in only two of the human cases reported, one in Austria (1924) and the other in Germany (1929).—F.E.W.

CHOW, T. L., HANSON, R. P. & MCNUTT, S. H. (1951). **The pathology of vesicular stomatitis in cattle.**—*Proc. 88th. Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23. 1951. pp. 119-124. **2526**

A description of the development and histology of vesicular stomatitis lesions in experimentally infected calves. The lesions were microscopically indistinguishable from those of F. & M. disease virus.—R.M.

KOCH, A. & ÁBRAHÁM, E. (1952). Immunisationsversuche mit dem Aujeszkyschen Virus. **[Immunological study of Aujeszky's disease.]**—*Acta vet. hung.* **2**, 271-279. [In German. Russian summary.] **2527**

Rabbits could not be immunized against Aujeszky's disease by s/c inj. of formalin-inactivated virus, cultured by Maitland's tissue culture method using minced chick embryos. G. pigs also could not be immunized against the disease by injections of formalin-inactivated virus, or of virus plus immune serum. Rats 6 months old or more could be immunized by injections of active virus and produced virus-neutralizing antibodies in their serum. They were not highly susceptible to the disease, but when the virus was injected intracerebrally they were as susceptible as rats 2–3 months old. Immune rat serum protected mice and g. pigs against the disease.—A. ACKROYD.

MARTÍN, E. R. (1952). La rabia paralitica bovina en Costa Rica. **[Paralytic rabies in cattle in Costa Rica.]**—*Zooprofilassi.* **7**, 493-520. [In Spanish.] **2528**

A description of the paralytic form of rabies

transmitted by bats in Costa Rica. Special emphasis was laid upon differential diagnosis, because the disease has many symptoms in common with trypanosomiasis, intoxications, indigestions, and colics, piroplasmosis, etc. In many cases paralytic rabies may be suspected as soon as debility of the hind legs, transient fever, exophthalmos, increased flow of saliva are observed.—I. MARTINI.

GARCIA VALADÃO, F. (1951). Algumas particularidades da epizootologia da raiva em Moçambique. **[Rabies in Mozambique.]**—*Rev. Med. vet., Lisboa.* **46,** 243-247. [French summary.] **2529**

G. considered that the domestic dog was not chiefly concerned with the transmission of rabies in Mozambique. He suggested that wild animals, such as wild dogs and cats, were responsible for most cases.—F. A. ESTEVES.

ANON. (1951). **Report of committee on rabies. [U.S.A.]**—*Proc. 55th Ann. Meet. U.S. live Stk sanit. Ass.* pp. 102-107. **2530**

During the year under review control measures had failed to check the disease and the committee blamed the lack of coordination between the various public bodies responsible for administering control measures.

The committee points out that the Bureau of Animal Industry lacked authority to engage in a national effort for rabies control and had drafted an enabling bill to remedy this.

An avianized virus showed promise of providing a highly useful vaccine; this was being manufactured in the U.S.A. and the committee urged that investigations of its potentialities should be actively prosecuted.—F. B. LEECH.

BRANDENBURG, H. (1952). Zum diagnostischen Tierversuch auf Tollwut. **[Diagnosis of rabies by experimental inoculation of laboratory animals.]**—*Zbl. Bakt. I. (Orig.)* **159,** 23-39. [English, French and Russian summaries.] **2531**

B. confirmed the advantages of the method used in the U.S.A. of intracerebral inoculation of rabies material into mice.—H. BEHRENS.

REMLINGER, P. & BAILLY, J. (1952). Le rage expérimentale du canard. **[Experimental rabies in ducks.]**—*Bull. Acad. nat. Méd.* **136,** 564-567. **2532**

Ducks were completely resistant to fixed virus, but 29%, inoculated intracerebrally with field strains, developed nervous symptoms. Some survived. The virus could not be recovered from the duck.—F. B. LEECH.

ERCEGOVAC, D. (1952). **[Production and titration of rabies immune serum.]**—*Acta Vet., Belgrade.* **2,** No. 2. pp. 67-74. [In Serbian. German summary.] **2533**

Immune serum was produced from ewes hyperimmunized intraperitoneally with fixed virus in high doses (10–20–50 ml. of the 1%, 5% or 10% emulsion).

Titration, carried out on white rats on account of their being more resistant than mice, was by intracerebral injection of a mixture of fixed virus plus immune serum dilutions.

—I. MARTINI.

NĚLIS, P., LAFONTAINE, A., SCHOENAERS, F., MASSA, H. & CLEEMPOEL, S. (1952). Essai de formolisation de la semence vaccinale avant l'inoculation à la génisse. **[Formolization of cow pox virus before inoculation into heifers.]**—*C.R. Acad. Sci., Paris.* **234,** 257-259. **2534**

The authors stated that formolization selectively inactivated most, but not all the M mutant strains. Passage through the testicles of rabbits had the opposite effect.

—E. A. GIBSON.

TRENTIN, J. J. (1953). **An outbreak of mouse-pox (infectious ectromelia) in the United States: I. Presumptive diagnosis.**—*Science.* **117,** 226-227. **2535**

TRENTIN, J. J. & BRIODY, B. A. (1953). **An outbreak of mouse-pox (infectious ectromelia) in the United States: II. Definitive diagnosis.**—*Ibid.* 227-228. **2536**

I & II. A highly infectious disease of lab. mice, with over 50% mortality, was diagnosed as mouse pox (infectious ectromelia) by the vaccinia antihaemagglutination test and by cross-immunization with vaccinia.

—J. E. SMITH.

BURNET, F. M. & EDNEY, M. (1952). **Influence of ions on the interaction of influenza virus and cellular receptors or soluble inhibitors of haemagglutination.**—*Aust. J. exp. Biol. med. Sci.* **30,** 105-118. **2537**

Concentrations of sodium and calcium ions were found to influence macroscopic haemagglutination, adsorption of virus by cells, union of indicator virus and mucoid inhibitor, and enzyme destruction of inhibitor by virus. Hexametaphosphate ions inhibited the last reaction.—IAN DAVIDSON.

MELNICK, J. L. & PENNER, L. R. (1952). **The survival of poliomyelitis and Coxsackie viruses following their ingestion by flies.**—*J. exp. Med.* **96,** 225-271. [Authors' summary modified.] **2538**

Poliomyelitis virus and Coxsackie (or C)

virus were quantitatively fed to laboratory bred blowflies, *Phormia regina* and *Lucilia sericata,* and to houseflies, *Musca domestica.* Naturally infectious human stools were the source of virus.

Poliomyelitis virus could be almost quantitatively recovered from flies and from their excreta collected over a period of several days following the feeding. C virus could also be recovered but in lesser yields. No conclusive evidence for virus multiplication in these flies was obtained.

Poliomyelitis virus from human sources could be detected in flies between the 5th and 17th day and in the excreta between the 4th and 10th day. Murine-adapted strains of poliomyelitis virus and murine encephalomyelitis virus could not be detected beyond the 5th day, even though comparable amounts of virus were fed. The persistence of C virus excretion (2 to 12 days) varied directly with the amount of virus fed.

Poliomyelitis virus, as present in human stools, survived drying and storage at room temp. for at least 3 days and at 4° for 3 weeks. C. virus from human stools under the same circumstances was detected for 15 days at room temp. (with marked drop in titre after the 3rd day) and for 21 days at 4° with little loss in titre. When stool samples were fed to flies and the dried excreta of the insects examined, it was found that (a) poliomyelitis virus persisted for at least 1 to 2 days at room temp. and for 3 to 4 days at 4°, and (b) C virus persisted for one day at room temp. and for 5 days at 4°.

Poliomyelitis virus could be carried through only two serial passages in adult flies. Flies emerging from maggots fed virus were free from the agent.

LÜBKE, A. (1952). Die Leberveränderungen bei der Virusanämie (Infekt. Anämie) des Pferdes. **[Liver lesions in equine infectious anaemia.]** — *Virchows Arch.* **322,** 187-213. **2539**

In acute cases and acute relapses degeneration of the centres of the lobules was typical. A severe reaction of the reticulo-endothelium with a centro-aciniform congestion and a corresponding haemosiderosis may also be seen. Hypoxia caused by the anaemia and collapse of the peripheral circulation might have been the causes.

In a chronic or latent infection the centro-aciniform sclerosis was the result of earlier acute attacks. The parenchyma corresponded to a fasting liver with a gradual disturbance in the water metabolism, and atrophy of the trabeculae of the lobule centres. The reticulo-endothelial reaction and the haemosiderosis of the Kupffer cells was less pronounced than in an acute infection. Very often the liver lesions were accompanied by changes in other organs (kidney). The infection was influenced by endogenous and exogenous factors affecting the circulation, and by differences in the virulence of the virus.—H. BEHRENS.

KOROTKIKH, A. V. (1953). **[Ecological factors in equine infectious anaemia.]**—*Veterinariya, Moscow.* **30,** No. 2. pp. 19-22. [In Russian.] **2540**

K. studied the influence on horses of local ecological conditions in Russia. He analysed soil and water in the infected Northern regions and in the disease-free Southern steppes; compared the numbers of blood-sucking insects, which are the chief vectors and 14 times greater in number in the North; examined horses for condition and working capacity, general blood picture, pH and mineral salts in the sera. Much of the information was given previously [see *V.B.* **20,** 2555; **21,** 2900; **22,** 994; **23,** 107 & 108] but new data were supplied.

[All references and figures below refer first to the infected and then to the disease-free areas respectively.] Quantity of P in soil 20·51 mg.%/8–15 mg.%; of Ca 0·45–1·5 mg.%/6–10 mg.%; C not usually found nearer than 100 cm. below surface/close to or near surface; water lacks minerals/is wholesome. The average Ca content of blood 10·6 mg./13 mg.% (normal 13–15 mg.%). K. stated that this deficiency of Ca chiefly accounts for the imbalance which lowers the horses' resistance and their general physiological condition, making them susceptible to E.I.A. Data on soil and water, vectors and the blood picture with chemical analyses were given in 3 tables.—F.A.A.

CHISTYAKOV, F. (1953). **[Treatment of equine infectious anaemia.]**—*Veterinariya, Moscow.* **30,** No. 3. pp. 25-27. [In Russian.] **2541**

An 8-year long epidemic of E.I.A. in a district and the methods of treatment were described. The rate of infection on farms varied between 20–51% although salmonella infection often complicated diagnosis. Affected farms were quarantined; the temperature of all horses was taken twice daily, the charts being used as diagnostic references; blood tests and clinical examinations were made fortnightly; symptomatic treatment and preventive treatments against helminths and brucellosis were given.

Clinical examinations, particularly noting the colour of mucous membranes, the pulse and

the state of the heart, sometimes revealed infection without temperature; such carriers were liable to fall sick and in consequence isolation of all known and suspected cases was resorted to. Under-nourished or over-worked horses were the most susceptible and also the most difficult to diagnose. Measures against the insect vectors consisted in darkening the stables and spraying of horses when outside with 2·5% solution of creolin every 2–3 hours. Premises were disinfected with 2–4% solution of caustic soda.

The disease came under control wherever the above measures were undertaken, together with adequate feeding and good management. No further outbreaks had occurred since mid-1952 and periodic examinations are now in force.
—F.A.A.

LEVASHOV, A. A., ERMAKOV, N. V., DRYAGIN, S. V. & SIDORENKO, B. V. (1953). **[Tests with vaccine "Viev" against equine infectious anaemia.]**—*Veterinariya, Moscow.* **30**, No. 3. pp. 20-24. [In Russian.] **2542**

Tests over a period of 3 years with 6 batches of the vaccine "Viev" [*V.B.* **23**, 109], used both as a prophylactic and a therapeutic, were made on a total of 360 healthy, or spontaneously or artificially infected horses, the latter being injected with sera from sick horses. Results showed that the vaccine had no specific value.—F.A.A.

THORNE, A. L. C. (1953). **Recovery of caprinized and lapinized rinderpest viruses from condensed water vapour removed during desiccation.** [Correspondence.] — *Nature, Lond.* **171**, 609. **2543**

Typical reactions occurred in susceptible bullocks or rabbits when inoculated with the condensate from the condenser chamber of an Edward's centrifugal freeze-dryer which had been used for the desiccation of caprinized or lapinized rinderpest vaccines. The condensed water vapour should always be collected into disinfectant and the machine disinfected after use.—A. ACKROYD.

KIMATA, H. (1951). **[Clinical diagnosis and therapy of "bovine influenza" and laryngopharyngeal paralysis.]**—*J. Jap. vet. med. Ass.* **4**, 329-333. [In Japanese.] **2544**

An account of "bovine influenza", a rapidly spread disease characterized by fever, dyspnoea, cessation of rumination, diarrhoea, irregular skin temperature, s/c emphysema and lameness. Laryngopharyngeal paralysis often occurred, with subsidence of fever, cessation of rumination and peristalsis, and regurgitation of ingested food or water through the nose. Treatment was purely symptomatic. In cases of paralysis it was essential to administer water by stomach tube.—KOGI SAITO.

MCKERCHER, D. G., MCGOWAN, B., HOWARTH, J. A. & SAITO, J. K. (1953). **A preliminary report on the isolation and identification of the bluetongue virus from sheep in California.** —*J. Amer. vet. med. Ass.* **122**, 300-301. **2545**

A disease which was clinically similar to bluetongue was first recognized in Texas in 1948. A virus has now been isolated from sheep with this disease and Onderstepoort has identified it as being a mild form of bluetongue.
—G. B. S. HEATH.

I. ANON. (1953). **Blue tongue found in California.**—*N. Amer. Vet.* **34**, 294. **2546**

II. STUART, J. E. (1953). **Blue tongue in sheep.**—*Vet. Med.* **48**, No. 4. p. xxvi. **2547**

I. The sheep disease known as bluetongue has been identified in the U.S.A. for the first time, according to a report made by the U.S. Bureau of Animal Industry, dated Mar 13, 1953. The disease is reported to have involved about 325,000 sheep in California, and it is believed that the disease affecting sheep in Texas and Utah, known as "sore muzzle", is probably bluetongue.

II. Bluetongue in sheep, which appeared over a relatively large area of California in virulent form was responsible for losses of 40% in some flocks. It was identified as the same infection reported from South Africa. The virus has been passed through several serial egg passages. The gnat was considered the carrier; the reservoir was unknown.

STUART, J. E., ALLEN, R. K., SHULTZ, G., DELAY, P. D. & ROSENBERGER, A. C. (1953). **An outbreak of scrapie in California sheep.**—*Bull. Calif. Dep. Agric.* **42**, 21-24. **2548**

By slaughtering 906 sheep from 53 separate flocks, it is believed that scrapie which was imported from Canada has been eradicated.
—G. B. S. HEATH.

HENNING, M. W. (1952). **Rift Valley fever.**—*J. S. Afr. vet. med. Ass.* **23**, 65-78. **2549**

This is a most useful review of the subject intended for a future edition of the author's "Animal diseases in South Africa". Apart from a few brief references to a paper by Haig, D. A. and Kaschula, V. R. listed as "in press", it contains no new facts.—J. RICHARD HUDSON.

MEDDA, A. & SPANEDDA, A. (1951). Ricerche su un virus filtrabile isolato da feti ovini

(Nota III). **[A virus isolated from aborted lambs.]**—*Atti Soc. ital. Sci. vet.* **5**, pp. 328-329. [English and French summaries.] **2550**

The virus isolated in Sardinia from sheep foetuses can grow on the chorioallantoic membrane of chick embryos where it causes proliferative and infiltrating changes. This virus does not seem to belong to the *Rickettsia* group.

—I. MARTINI.

SOFRENOVIĆ, D. (1951). **[The histology of the lymph nodes in pigs artificially infected with swine fever.]**—*Acta vet., Belgrade.* **1**, 149-152. [In Serbian. Abst. from French summary.] **2551**

In 460 pigs experimentally infected with swine fever, and killed for examination 5–7 days after infection, the superficial and deep inguinal, mandibular, and thoracic lymph nodes were examined histologically. The percentages of lymph nodes which showed various types of pathological change were listed. For example, inflammatory macrophages were found in 78–95%, endothelial proliferation of the blood vessels in 99%, no pathological change in 1–7%.

—R.M.

HARVEY, M. J. & COOPER, F. S. (1953). **Simultaneous vaccination with modified live hog cholera vaccine and hog cholera antiserum.**—*J. Amer. vet. med. Ass.* **122**, 397-399. **2552**

A vaccination trial was carried out in 174 pigs (45 controls) using "Rovac" (a rabbit-adapted live swine fever vaccine) and swine fever serum, simultaneously injected. Immunity persisted for at least 6 months.—R.M.

CASSELBERRY, N. H., MALMQUIST, W. A., HOULIHAN, R. B. & BOYNTON, W. H. (1953). **Hog cholera immunization with a new vaccine, propagated *in vitro*, and hog cholera antiserum.**—*Vet. Med.* **48**, 24-27. **2553**

Viracine, a modified live swine fever virus vaccine produced in tissue culture, was administered with swine fever antiserum in field studies in California and Iowa. A total of 7,313 pigs in 51 droves were vaccinated and results reported. No animals died as a result of the vaccination.

Between 2 and 7½ months after vaccination, a few pigs from each herd were challenged: of a total of 165, only 3 died. Of 194 control animals 187 developed typical swine fever. In one herd controls proved resistant to challenge injection.

A group of ten 170 lb. animals vaccinated with viracine and serum and retained on the same farm for 90 days were hyperimmunized with the required dose of 5 ml. hyperimmunizing virus per lb. body wt. At the same time, 10 animals from another farm in the same area vaccinated by the simultaneous serum and virus method were also hyperimmunized. All of these survived. Neither group was entirely satisfactory in that bleedings were missed because of high temperatures, but the group treated with viracine and serum were just as resistant to the hyperimmunizing dose as those vaccinated with serum and virus.—A.S.

PILET, E. (1952). La méningo-encéphalomyélite enzootique du porc à Madagascar. **[Porcine encephalomyelitis in Madagascar.]**—*Bull. Off. int. Epiz.* **38**, May. pp. 61-105. [English summary.] **2554**

An account of the information derived from a study of Teschen disease as it occurs in Madagascar. The epidemiology of the disease was dealt with at length, as were also experiments with formol-, phenol-, and crystal-violet-inactivated vaccines.—J. T. DONE.

HORSTMANN, D. M. (1952). **Experiments with Teschen disease (virus encephalomyelitis of swine).**—*J. Immunol.* **69**, 379-394. **2555**

The virus of Teschen disease showed no antigenic relationship with any of the other neurotropic viruses used in this study. The virus survived in tissue culture for 17 days. The clin. and pathological picture of the disease is considered to be easily distinguished from poliomyelitis. Virus could be detected in the blood as long as 10–12 days before the onset of paralysis, but it was not found later in the incubation period or after the onset of symptoms. Complement fixation and serum neutralization tests proved unsatisfactory for the demonstration of antibodies.—D. LUKE.

KODRNJA, E. (1950). Djelovanje krvi svinja hiperimuniziranih protiv zarazne uzetosti. **[The action of blood from hyperimmunized pigs in Teschen disease.]**—*Vet. Arhiv.* **20**, 1-12. **2556**

Defibrinized hyperimmune blood had an evident though low protective activity in pigs infected *via* the intracerebral route. The subcutaneous administration of the same blood had no curative action when used in pigs which already had symptoms of the disease.

—I. MARTINI.

PLOWRIGHT, W. (1953). **Observations on virus pneumonia of pigs in Kenya.**—*Vet. Rec.* **65**, 313-318. [Author's summary slightly modified.] **2557**

P. recorded the occurrence in Kenya of a pneumonia of swine which is probably identical

with that described by Gulrajani & Beveridge [*V.B.* **22**, 2499] as "infectious pneumonia of pigs".

At least three primary isolations of an infective agent were made by intratracheal inoculations of healthy pigs. One strain was passaged 6 times. Lung and lymph node filtrates, prepared by using filter pads of the Seitz type, were shown to be infective in only one of 3 instances. Observations were made on the experimental disease with particular reference to the frequency of temperature reactions and the demonstration of a viraemia. The gross and micoscopic pathology were briefly described.

No success attended preliminary efforts to establish the agent in mice and embryonated eggs.

LUCAM, F., GORET, P., JOUBERT, L. & POUSSOT, A. (1953). Ovoculture des virus de la maladie de Carré et de l'hépatite contagieuse du chien. Étude sur le furet des caractères pathogènes et immunigènes de ces virus avianisés. **[Cultivation of the viruses of distemper and of canine hepatitis in the chick embryo.]**—*Bull. Acad. vét. Fr.* **26**, 67-72. 2558

After a varying number of passages through chick embryos, canine distemper virus and a ferret-adapted strain of canine hepatitis virus were non-pathogenic or of reduced pathogenicity for ferrets, depending on whether dead or surviving embryos were used as inoculum for successive eggs.

Avianized distemper virus conferred no immunity on ferrets in a small experiment; avianized hepatitis virus gave some protection.

—J. E. SMITH.

GORET, P., JOUBERT, L., LUCAM, F. & FLACHAT, C. (1953). Sensibilité du chiot à l'allaitement au virus de l'hépatite contagieuse du chien. **[Susceptibility of artificially fed young puppies to virus hepatitis.]**—*Bull. Acad. vét. Fr.* **26**, 41-51. 2559

Artificially fed puppies, 2–15 days old, regularly succumbed to 4 strains of canine hepatitis virus, liver inclusions being seen in 8 out of 19 cases. Naturally fed puppies of the same age, and older puppies (2–3 months), were more resistant. The infective agent was a 30% liver or brain emulsion inoculated intraperitoneally or into the eye.—J. E. SMITH.

MARTIN, L.-A. & GORET, P. (1953). Sensibilité du chien à l'inoculation expérimentale de deux souches de virus du groupe hépato-neurotrope isolées chez l'homme. **[Susceptibility of the dog to experimental infection with two human neurotropic viruses.]**—*Bull. Acad. vét. Fr.* **26**, 53-66. 2560

Two viruses from human cases resembling poliomyelitis produced transient pyrexia and sometimes death with hepatic lesions during passage through dogs. No nervous symptoms occurred. Unweaned puppies were more susceptible. Both viruses showed some cross-immunity with the virus of canine hepatitis.

—J. E. SMITH.

BIENFET, V. (1953). Les pneumonies interstitielles à cellules géantes. **[Interstitial pneumonia with giant-cells in dogs and in man.]**—*Ann. Méd. Vét.* **97**, 51-62. 2561

B. compared lesions found in the lungs of a number of distemper and hard-pad cases in dogs with those in the atypical pneumonia of man described in a number of virus infections, in some rheumatism cases, in post-diphtheria complications, and in beryllium poisoning. Interstitial pneumonia occurred in 12 out of 19 cases, and giant cells in 6 out of 19. The pneumonia was constant in dogs showing severe and prolonged chest symptoms. Histologically it was characterized by thickening and infiltration of the alveolar wall with macrophages and exudate. In the alveolar lumen macrophages or desquamated cells, rather than polymorphs, were present. A broncho-pneumonia due to secondary bacterial infection might coexist. The "cornification" of the lung reduced its elasticity and so produced the dyspnoea without giving rise to any detectable pulmonary sounds.

The giant cells may be found in the wall or lumen of the alveolus. They contained fewer than 12 nuclei and were derived from the "fixed histiocytes and alveolar cells". One dog showed inclusion bodies tentatively diagnosed as *Toxoplasma*.

B. concluded that the three lesions (interstitial pneumonia, inclusion bodies, and giant cells) were not specific for any infection, but he did not exclude the possibility that some human atypical pneumonias may be due to a canine virus infection; this hypothesis could be tested only by production of the disease experimentally in dogs.—J. R. HUDSON.

KLARENBEEK, A. (1953). De kat als verdachte bij het veroorzaken van een locale en regionale lymphklieraandoening bij de mens. **[Cat scratch fever.]**—*Tijdschr. Diergeneesk*, **78**, 323-328. [English, French and German summaries.] [Author's summary modified.] 2562

A review of the literature since 1950 on the most important features of this regional non-

bacterial lymphadenitis in man was given. The significance of the cat in transmission of the infection, and differentiation by a specific antigen from similar forms of lymphadenitis, was discussed.

FENNER, F. (1952). **Myxomatosis: the virus and the disease it causes.**—*Aust. J. Sci.* **15**, 81-85. **2563**

An outline of the history of myxomatosis and of the infectivity of the virus. A detailed study of the morphology and biological characteristics of the virus showed it to be very similar to the pox viruses. In the wild rabbit, *Oryctolagus cuniculus,* the virus of myxomatosis causes a disease of unusually high lethality. It appears that a single virus particle will initiate infection which then progresses and causes death.

It was shown experimentally that there is an orderly progression of virus from the site of inoculation to the regional lymph node, then to the blood, spleen and lung and finally to the skin in parts distant from the site of inoculation.

The sera of rabbits which had recovered from the disease gave strong reactions (titre 1:640 to 1:5120) to the c.f. test, but the titres fell over a period of 5 months to 1:80 to 1:160 and then remained at this level for a further 12 months. When tested for their ability to inactivate myxoma virus on the chorionic membrane of the chick embryo, the sera reduced the pock count by 95 to 99% and retained this ability for 18 months.

These tests were applied to nearly 1000 survivors in 20 localities and it was found that when the rabbit population had been greatly reduced by the disease, the majority of the rabbits left were immune, and in areas where less extensive kills were recorded between 20 and 50% of the survivors were immune. The implications of these results were discussed with regard to the long-term propects of myxomatosis as a means of controlling rabbit pest.

—D. F. STEWART.

BUTTON, J. A. (1952). **The insect vector in relation to myxomatosis in Australia.**—*J. Agric., W. Aust.* **1**, 819-829. **2564**

In most regions of Western Australia the mosquito appears to have been the vector chiefly responsible for the spread of the disease, and the most prevalent species were *Aedes camptorhynchus, A. alboannulatus, A. annulipes* and *Culex fatigans.* In some areas the stickfast flea (*Echidnophaga myrmecobii*) probably played a significant part. Lice of the family Haematopinidae have also been recovered from rabbits and have been shown to transmit the disease under laboratory conditions.

The importance of a more thorough understanding of the vectors of the disease was emphasized.—D. F. STEWART.

LINES, E. W. L. (1952). **History of epizootics of myxomatosis in rabbits of S.A. during 1951-52.**—*J. Dep. Agric., S. Aust.* **56**, 232-238. **2565**

During Dec. 1950 myxomatosis suddenly became epizootic along the Murray River in New South Wales, and early in 1951 the disease appeared at a number of points in South Australia. These were located along the Murray River and were scattered over the country between the River Murray and St. Vincent's Gulf. Other unexplained and apparently independent outbreaks occurred on the coast on both sides of Eyre Peninsula in the autumn of 1951. In the arid country of the "Far North Interior" a number of outbreaks were seen from Jan. 1951. The disease was rampant in the autumn of 1951 in a narrow strip along the River Murray. It died down during the winter only to flare up during the spring, giving rise to intense epizootics which caused high mortality over 6,000 sq. miles.

An inoculation campaign in the early summer of 1951 assisted in spreading the disease in southern areas, but was less successful in the "mid-North" region where effective kills were largely confined to river valleys.

In country more than 1000 ft. above sea-level the disease did not spread satisfactorily.

In areas where effective kills were obtained there has been a remarkable recovery of pasture growth and some areas give promise of doubling their stocking rate.—D. F. STEWART.

PEREIRA, H. G. (1953). **Multiplication of fowl-plague virus in chick-embryo cell suspensions.**—*J. Path. Bact.* **65**, 259-261. **2566**

P. described a method of studying the multiplication of the fowl plague virus in cell suspensions comprised of known numbers of cells and a simple saline medium of known composition. Observations on the influence of the numbers of cells in the suspension upon virus growth were given.—F. T. W. JORDAN.

POPOVIĆ, B. (1951). **[Pigeons and sparrows and the spread of Newcastle disease.]**——*Acta vet., Belgrade.* **1**, 168-171. [In Serbian, English summary.] **2567**

Pigeons were susceptible to N.D.V., infection resulting in a latent form of the disease and in immunity. Infection, it is claimed, was transmitted by cohabitation from pigeon to

pigeon, but not from pigeon to chickens, neither from pigeon to sparrow. The faeces of diseased pigeons were not infectious for chickens. Sparrows were not susceptible to N.D.V.—R.M.

TEKLIŃSKA, M. (1951). Zastosowanie wirusa niezjadliwego do walki z rzekomym pomorem kur w Polsce. **[Non virulent virus for vaccine control of Newcastle disease in Poland.]**—*Polsk. Arch. Weterýn.* **1**, 113-132. [English and Russian summaries.] **2568**

In field experiments using a vaccine (referred to as "the Indian vaccine") prepared from Hertfordshire virus modified by serial passage through chick embryo (cholio-allantoic fluid), immunization was obtained protecting fowls against Newcastle disease for one year following a dose (i/m) of 1 ml. per bird of 1:2000 dilution of the modified Hertfordshire virus.—W. J. SOJKA.

PULSFORD, M. F. & STOKES, J. (1953). **Infectious laryngotracheitis in South Australia. A note on its occurrence and a survey of the distribution of antibodies active against the virus.**—*Aust. vet. J.* **29**, 8-12. **2569**

Before this report of its occurrence, infectious laryngotracheitis had not been recognized in South Australia. Two strains of the virus were isolated, and comparison with standard infectious laryngotracheitis virus left no doubt as to the identity of the infective agent.

Sera from widespread areas of the state were examined for antibodies. Approx. 50% of young fowls gave positive reactions. This finding led the authors to suggest that the disease had been present for some considerable time, but as an inapparent infection.

—K. G. JOHNSTON.

WALKER, R. V. L. (1953). **A newly discovered virus isolated from ducks.**—*Canad. J. publ. Hlth.* **44**, 25. [Only abst. given. Abst. modified.] **2570**

A condition appeared late in July among ducklings in Manitoba. Paralytic symptoms not unlike those of Newcastle disease were present. Later sinusitis accompanied the condition. Fowls, turkeys and geese remained free from the disease.

From the tissues and sinus exudates of young ducklings an agent was obtained. This passed through a coarse and medium Berkefeld candle but failed to pass through the fine Berkefeld and Seitz "EK" filter. It caused death of embryos in 16 to 40 hours. A generalized skin condition is found in the embryos and the liver is swollen and friable.

The agent is not Newcastle disease virus. It failed to produce infection in fowls and ducks when inoculated by the intravenous, intramuscular, intranasal, intratracheal and intradermal routes. Inoculated birds, however, developed antibodies which neutralized the agent but failed to neutralize Newcastle disease virus.

MITCHELL, C. A., WALKER, R. V. L. & BANNISTER, G. L. (1953). **Preliminary experiments relating to the propagation of virus in the bovine mammary gland.**—*Canad. J. comp. Med.* **17**, 97-104. **2571**

These experiments were undertaken to determine whether viruses not normally pathogenic for cattle would propagate in the mammary gland. A duck virus [see preceding abst.], Newcastle disease and influenza A viruses persisted in the gland for approx. 2 weeks and suddenly disappeared. Precise measurements were not made with the first, but titres of the other two rose and persisted although each day the virus free in the milk was removed by milking. Conclusions on the propagation of these viruses are withheld pending further study.—R. GWATKIN.

WEISS, K. E., HAIG, D. A. & ALEXANDER, R. A. (1952). **Aureomycin in the treatment of heartwater.**—*Onderstepoort J. vet. Res.* **25**, No. 4, pp. 41-50. **2572**

The authors demonstrated the value of aureomycin in treating heartwater in sheep, where sulphonamide therapy had failed. The minimal therapeutic dose for sheep appeared to be 2·5 mg./lb. injected i/v either as a single dose or in divided doses at intervals of 24 hours: doses smaller than the curative dose had a marked effect upon the course of the disease.

In cattle even advanced cases responded promptly to 2–2·5 mg./lb. and it was possible that doses as small as 1 mg./lb. were effective. The authors did not succeed in establishing the minimal effective dose for cattle. Administered in the incubation stage of the disease at approx. double the curative dose it had a marked effect upon the subsequent course of the disease. Doses up to 20 mg./lb. did not interfere with the production of immunity.

The authors considered aureomycin, alone or in combination with a sulphonamide, to be the drug of choice for the disease. It could also be used together with live virus for immunization.—A.S.

TADDEI, G. (1952). Ricerca sierologica degli anticorpi per la febbre Q nella popolazione umana e nei bovini da macello in Provincia di Massa-Carrara. **[Serological research on Q fever antibodies in man and slaughter**

cattle in the Massa-Carrara Province, Italy.] —*Zooprofilassi.* **7,** 527-534. [English and French summaries.] **2573**

In Massa-Carrara province (Tuscany) out of 837 samples of human blood serum, the c.f. test for Q fever antibodies was positive in 8·6%. Sera from 258 cattle gave positive reactions in 8·8% of cases.—I. MARTINI.

BIELING, R. (1951). Auf welche Weise infiziert sich der Mensch mit Balkangrippe? **[Sources of Q fever in man.]**—*Dtsch. med. Wschr.* **76,** 1122-1123. **2574**

A discussion of the literature, with no new work.—F.E.W.

SALOMON, L. (1953) Action des antibiotiques sur les ultravirus. **[Action of antibiotics on viruses.]**—*Rec. Méd. vét.* **129,** 73-85. **2575**

A short review. The known antibiotics were all discovered by their action on bacteria. They act only on the largest viruses, on rickettsia and pleuro-pneumonia-like organisms. Where an action on viruses proper was claimed it has always been found to be incidental; for instance, the action of terramycin on rabies virus was due to its low pH. By actually searching for a viricidal substance, Waksman *et al.* found Ehrlichin. It is inactive against bacteria, active *in vitro* on influenza A and B and Newcastle disease virus, but active *in vivo* on influenza B only. S. suggested that the solution of the problem will be founded on our better understanding of the process of virus multiplication.

—A. MAYR-HARTING.

GIRARDI, A. J., ALLEN, E. G. & SIGEL, M. M. (1952). **Studies on the psittacosis-lymphogranuloma group. II. A non-infectious phase in virus development following adsorption to host tissue.**—*J. exp. Med.* **96,** 233-246. [Authors' summary modified.] **2576**

The pattern of growth of meningopneumonitis virus *in vitro* seemed to be similar to that occurring *in ovo* [*V.B.* **22,** 1009] and the initial stages of development, the adsorption and the latent periods were therefore investigated by the use of tissue culture procedures. The initial increment of infectivity in allantoic membrane suspensions following virus inoculation *in ovo* was due to prolonged adsorption of virus and not to immediate virus reproduction. The length of the adsorption period varied with the virus dilution employed.

The reduction of virus titre in allantoic membrane suspensions subsequent to adsorption was due to a change in infectious virus to a non-infectious form and this seemed to be a part of the normal developmental cycle of the virus.

The authors discussed the possible causes for both prolonged virus adsorption and for the subsequent development of a non-infectious form.

See also absts. **2730, 2732-2733** (reports, U.S.A.).

IMMUNITY

CARRÈRE, L. & ROUX, J. (1952). Étude expérimentale de la cortisone et de l'ACTH sur la production des anticorps. **[Action of cortisone and A.C.T.H. on production of antibodies.]**—*Ann. Inst. Pasteur.* **83,** 26-37. **2577**

In g. pigs and rabbits, antibody production was generally impeded, but much depended on the time and method of application of the hormones.—R. MARSHALL.

POLSON, A. (1952). **Comparative electrophoretic studies of bovine and human colostrum in relation to neo-natal immunity.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 7-12. Author's summary modified. **2578**

Seeing no reason to doubt the generally accepted notion that the concentration of γ-globulins is an accurate index of humoral immunity, P. concluded that in cattle there was no transplacental transmission of specific immunity and that the acquired passive immunity of the calf results from the globulins present in high concentration in the colostrum. In human beings passive immunity is acquired exclusively *in utero,* to a degree correlated with the immunity of the mother. This immunity is not influenced by the ingestion of colostrum since the γ-globulin component is absent.

PODLIACHOUK, L. & EYQUEM, A. (1952). Les groupes sanguins des équidés. II. Les groupes sanguins des chevaux. **[The blood groups of the horse.]**—*Ann. Inst. Pasteur.* **83,** 405-407. **2579**

The authors used agglutination with isoantibodies to demonstrate four blood group antigens, A, B, C and D in mules and donkeys, of which A, C and D were also found in horses. A further antigen E was also found in horses. These antigens were found in several combinations but 5 out of 130 horses possessed none of them. Naturally-occurring antisera (anti-A, anti-C or anti-D) were present in the sera of

about a quarter of the horses, but anti-B was found only in mares immunized by the bearing of mule foals.—G. FULTON ROBERTS.

KOLIĆ, I. (1951). **[Isohaemagglutinins in the blood of horses.]**—*Acta vet., Belgrade.* **1,** 142 - 148. [In Serbian, French summary.] **2580**

The titre of isohaemagglutinins in the blood of 41 Yugoslav horses was very low (1 : 1 to 1 : 8). The serum titre of Group O blood was no higher than that of the other groups, while that of Group B was higher than Group A. It was not possible to increase the titre by immunizing horses with r.b.c. of an opposed blood group.—R.M.

SZENT IVÁNYI, T. & SZABÓ, ST. (1953). Untersuchungen über die Ursache der hämolytischen Gelbsucht der neugeborenen Ferkel. **[Haemolytic disease of new-born piglets.]** —*Acta vet. hung.* **3,** 75-80. [In German. Russian summary.] **2581**

The authors described some litters of piglets which were born healthy but which developed jaundice and weakness after sucking and died usually within 24 hours of birth. Details were given of the mating history, clin. and P.M. findings and agglutination reactions in the affected animals and all these findings are consistent with a diagnosis of haemolytic disease of the new-born. [This is the first fairly detailed report of this disease occurring naturally in pigs. In general the disease takes a very similar form to that in foals, the placenta being impermeable to antibodies in both these species.]—G. FULTON ROBERTS.

BUXTON, J. C. & BROOKSBANK, N. H. (1953). **Haemolytic disease of new-born pigs caused by iso-immunisation of pregnancy.**—*Vet. Rec.* **65,** 287-288. **2582**

Several litters of pigs born on the same farm died from jaundice 2–5 days after birth. P.M. findings were those of haemolytic jaundice. Blood serum from one of the sows concerned agglutinated r.b.c. of the boar at a dilution of 1 : 1,000. Using Coombs' test [*V.B.* **19,** 2714] blood from 10 of the affected piglets was shown to have been sensitized by an iso-antibody.—R.M.

HANSEN, F. & GRÜNHOLZ, G. (1953). Über die Wirkung des Penicillins und Streptomycins auf den experimentellen anaphylaktischen Schock beim Meerschweinchen. **[Effect of penicillin and streptomycin on experimental anaphylactic shock in g. pigs.]**—*Zbl. Bakt. I. (Orig.)* **159,** 296-300. [English, French and Russian summaries.] **2583**

Experimental anaphylactic shock could not be prevented by a single dose of either penicillin or streptomycin, but repeated doses of procaine penicillin or, to a much lesser degree, of dihydrostreptomycin were effective.

—G. P. MARSHALL.

See also absts. **2448** (study of *V. fetus*); **2449** (anthrax vaccine); **2475-2476** (brucellosis); **2481** (fowl spirochaetosis); **2514-2524** (F. & M. disease); **2527** (Aujeszky's disease); **2533** (rabies); **2534** (cow pox); **2537** (influenza); **2542** (equine infectious anaemia); **2543** (rinderpest); **2552-2553** (swine fever); **2554-2556** (Teschen disease); **2568** (Newcastle disease); **2559** (infectious laryngotracheitis); **2573** (Q fever); **2597** (cysticercosis); **2604** (*Haemonchus* and *Trichostrongylus* spp.); **2729** (report, U.S.A.).

PARASITES IN RELATION TO DISEASE [GENERAL]

SCHWARTZ, B. (1952). **Internal parasites of swine.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 1787. pp. 41. **2584**

A general account of helminth and protozoan parasites in pigs in the U.S.A., written for stockowners.—JAS. G. O'SULLIVAN.

BULL, P. C. (1953). **Parasites of the wild rabbit, *Oryctolagus cuniculus* (L.) in New Zealand.**—*N.Z.J. Sci. Tech.* Sect. B. **34,** 341-372. **2585**

After examining over 6,000 wild New Zealand rabits, B. compiled a list of 19 protozoan, arthropod and helminth parasites, for some of which he included data concerning incidence. *Eimeria stiedae* was a significant cause of death among young rabbits. With few exceptions the parasites were identical with those of English rabbbits. The English rabbit flea (*Spilopsyllus cuniculi*) and tapeworms of the genus *Cittotaenia* have not, however, been found in New Zealand.—A.S.

KOUTZ, F. R. (1953). **The effect of built-up litter on the parasite ova and oocysts of poultry. Second report.**—*Poult. Sci.* **32,** 313-320. **2586**

[For previous report see *V.B.* **22,** 2858.] Further experiments confirmed that neither the ova of *Ascaridia galli, Heterakis gallinae* or *Capillaria retusa,* nor the oocysts of *Eimeria acervulina, E. maxima* and *E. tenella* were destroyed in built-up litter.—R.M.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

HESS, A. D. (1953). **Current status of insecticide resistance in insects of public health importance.**—*Amer. J. trop. Med. Hyg.* **2,** 311-317. 2587

A study of the development of resistance to insecticides among insects of importance to public health in various parts of the world. H. drew attention to the dangers attendant upon the development of resistance and emphasized the need for research into this problem.—A.S.

KEMPER, H. E. & PETERSON, H. O. (1952). **Hog lice and hog mange. Methods of control and eradication.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 1085. pp. 22. 2588

Benzene hexachloride (0·13% gamma isomer) was effective in a single treatment applied as a dip or spray for sarcoptic mange and against lice on pigs. There is no satisfactory treatment for demodectic mange.

—JAS. G. O'SULLIVAN.

DU TOIT, R. & FIEDLER, O. G. H. (1952). **The new synthetic insecticides as dressings for blowfly strike in sheep.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 53-63. 2589

A discussion of recent work on the blowfly problem in South Africa, with emphasis on control measures.

Several new synthetic insecticides were tested for their effect on mature third stage larvae of *Lucilia cuprina,* and methods described for the assessment of larvicidal properties *in vitro* and *in vivo.* Results were given for the different insecticides tested, and results of patch tests upon sheep, using the more common organic solvents of the insecticides, were also reported.

Benzene hexachloride (B.H.C.) in wettable powder form and in emulsions was tested against experimentally produced blowfly infestations and results compared.

The authors recommended the use of the γ-isomer of B.H.C. in wettable powder form at a conc. of 0·5%, and stressed the advantage of B.H.C. in killing third stage larvae slowly, permitting them to leave the wound before death.

—A.S.

ZUMPT, F. (1951). **Myiasis in man and animals in Africa.**—*S. afr. J. clin. Sci.* **2,** 38-69. 2590

A general review of published work on myiasis in the African continent with 99 references. Z. discussed myiasis under the type headings (1) traumatic, (2) attacks by blood-sucking larvae, (3) dermal and sub-dermal, (4) myiasis of head cavities including the eyes, (5) myiasis of the uro-genital system. The various flies causing myiasis were given in a table, arranged under family and species, together with geographical distribution, type of condition produced, host, and African records.

—F.E.W.

ROBERTS, I. H., LOFGREN, J. A. & BERNDT, W. L. (1952). **Tests with insecticide formulations for the destruction of cattle grubs.**—*J. econ. Ent.* **45,** 909-913. 2591

Tests to find any insecticide equal, superior or complementary to rotenone failed. Sodium tripolyphosphate, used as a spreader, was not more effective than soap. The wash method was better than the aerosol bomb method of application.—BERYL A. KAY.

NASH, T. A. M. (1952). **The ecology of *G. palpalis*: some recent findings.**—*Bull. Bur. interafr. Tsetse.* I.S.C.T.R. (52) No. 2. pp. 7. [Mimeographed.] 2592

The average life of a female *G. palpalis* varied from 7–16 weeks, while that of the male fly varied from 5–8 weeks. The decrease in the fly population which was observed during the dry season in Northern Nigeria, was found to be due to a reduced reproduction rate, lowering of longevity, and a heavy fly mortality as a result of the unfavourable conditions of temp. and humidity. The reverse occurred during the wet season. It was also observed that *G. palpalis* favoured a clear flight line along a stream, together with lateral and overhead insulation from the sun. As a result of these observations new methods of bush clearing for the control of *G. palpalis* were described.

—D. W. JOLLY.

ERASMUS, L. D. (1952). **Sensory and motor changes caused by a male tick, Genus *Hyalomma*.**—*S. Afr. med. J.* **26,** 985-987. 2593

A report of a case of tick paralysis in an adult African, caused by a male *H. transiens.* The tick attached to the right axilla and paralysis and anaesthesia of the right arm developed. Recovery from the paralysis occurred 5 days after the removal of the tick, but some degree of local anaesthesia persisted for 3 months.—D. W. JOLLY.

GILLARD, A. (1949).) Les tiques et la babésiellose bovine à la Réunion. **[Ticks and *Babesia* infection in cattle in Réunion.]** —*Rev. agric. Réunion.* **49,** 5-11 & 51-58. 2594

An account of the life history of *Boophilus*

decoloratus, the vector of *Babesia* infection of cattle in Réunion, and other ticks, of the disease and of its treatment, and of suitable sprays and dips for tick control.

—BERYL A. KAY.

FIEDLER, O. G. H. (1952). **The lethal effect of some insecticides on the B.H.C.-resistant blue tick,** *Boophilus decoloratus* **Koch.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 65-67. 2595

D.D.T. and its related compounds seem to be the only modern contact insecticides against which *B. decoloratus* has been unable to build up any resistance. Toxaphene and parathion are definitely less effective against the B.H.C.-resistant strain and higher concentrations are needed to achieve a good control. Dieldrin and related compounds, which otherwise are very powerful insecticides, appear to be of little value for the control of B.H.C.-resistant blue tick.—A.S.

See also absts. **2484** (*O. moubata* transmitting *L. icterohaemorrhagiae*); **2564** (insect vectors of myxomatosis); **2663** (parasites of mink).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

PRICE, E. W. (1953). **The fluke situation in American ruminants.**—*J. Parasit.* **39,** 119-134. [Author's summary modified.] 2596

The salient features of fluke infestation of American ruminants and the available methods for their control were discussed. Some problems that require solution before a widespread programme can successfully be undertaken were pointed out, such as:—

The status of species in the genus *Fasciola* and their pathogenicity; the bionomics of the snail intermediate hosts and other factors influencing fluke propagation and dissemination; development of molluscicides that are as effective, or more so, than copper sulphate but not toxic to fish and other aquatic life; the discovery of a molluscicide applicable for the control of the snail host of the lancet fluke on pastures; the development of medicaments that will destroy immature fasciolinid flukes in the liver; the development of a drug that will destroy the lancet fluke in infested animals.

PEEL, C. (1953). **Apparent acquired immunity to** *Cysticercus bovis* **in certain age groups of the N'dama cattle of Sierra Leone.**—*Vet. Rec.* **65,** 244-247. [Author's summary modified.] 2597

The rate of incidence of cysticercosis in abattoir-slaughtered cattle decreased in direct ratio to the increase of the animal's age and the number of cysts per infestation became progressively less as the age increased. Cattle over 5 years old did not appear to become reinfested. Whether this absence of infestation in the older animals was in fact a true immunity brought about by repeated infestations in early life or is due to some other factor is not known.

If only those cattle showing a full mouth were slaughtered, both cysticercosis in cattle and taeniasis in the human population might, in time, become controlled.

HARWOOD, P. D. (1953). **The use of lead arsenate mixed with phenothiazine for the removal of tapeworms from sheep and goats.**—*Proc. helminth. Soc. Wash.* **20,** 29-31. 2598

There was little therapeutic difference in sheep and goats between lead arsenate mixed with phenothiazine and lead arsenate alone. A dosage of 5 to 7 g. of lead arsenate was lethal, but there were no toxic effects from therapeutic doses unless the animals were debilitated. Sheep and goats were treated in advanced pregnancy without ill effects.—JAS. G. O'SULLIVAN.

NEVENIĆ, V. & MARKOVIĆ, D. (1951). **[The goat as intermediate host of** *Taenia serialis.***]**—*Acta vet., Belgrade.* **1,** 128-131. [In Serbian. French summary.] 2599

Multiceps serialis was found in 3 out of 3,000 slaughtered goats from Macedonia and part of Serbia. The cysts were located in the kidney, heart, and leg muscle.—R.M.

MASKAR, Ü. (1953). Über die experimentell erzeugte Entwicklung des Hundebandwurms (Mesocestoides lineatus) aus den Dithyridien von Huhn und Igel. **[Experimental development of the dog tapeworm** (*M. lineatus*) **from dithyridia from hens and hedgehogs.]**—*Schweiz. Arch. Tierheilk.* **95,** 188-193. [English, French and Italian summaries.] 2600

Dithyridia (tetrathyridia) found in the viscera of fowls and a hedgehog were fed to 4 dogs, with precautions to exclude extraneous infestation. *M. lineatus* were found in the faeces and were recovered P.M. from all the dogs from 50–151 days after ingestion of the dithyridia. M. concluded that fowls and hedgehogs are intermediate hosts for this tapeworm.—R.M.

NYBERG, W. (1952). **Microbiological investigations on antipernicious anemia factors in the fish tapeworm.**—*Acta med. scand.* Suppl. No. 271. pp. 68. [In English.] **2601**

Previous authors had suggested that some intestinal worms need a factor assumed to be vitamin B_{12} for normal development. N. determined the microbiological activity of water extract of *D. latum* with *Lactobacilus leichmannii strain* 4797. This activity corresponded with an average vitamin B_{12} content of 2·3 μg./g. of dry worm substance, but it was pointed out that *in vitro* experiments are required to prove that vitamin B_{12} is not synthesized by the worm itself. It was suggested by work which was still in progress on the culture of *L. casei* and *Leuconostoc citrovorum* that *D. latum* also contains both folic acid and citrovorum factor.

Ascaris lumbricoides was found to contain roughly the same amount of vitamin B_{12} as *D. latum*, whereas *Taenia saginata* contained only one fiftieth of that amount.—F.E.W.

VON BRAND, T., WEINSTEIN, P. P., MEHLMAN, B. & WEINBACH, E. C. (1952). **Observations on the metabolism of bacteria-free larvae of** *Trichinella spiralis*.—*Exp. Parasit.* **1,** 245-255. **2602**

The main end-product of bacteria-free larvae of *T. spiralis* studied *in vitro* was *n*-valeric acid and carbohydrate metabolism was not affected by the presence or absence of air. Independently of carbohydrate utilization, some lipoid disappeared from the larvae under aerobiosis.—JAS. G. O'SULLIVAN.

KATES, K. C. & TURNER, J. H. (1953). **Experimental studies on the pathogenicity of** *Nematodirus spathiger,* **a trichostrongylid parasite of sheep.**—*Amer. J. vet. Res.* **14,** 72-81. **2603**

Eight lambs were given 300,000 to 900,000 larvae of *N. spathiger* in 2 doses over 3 days and 6 lambs received the larvae over a 4-week period. There was an av. wt. difference of 7 lb. between the infested lambs and controls. Lambs receiving the larvae over 3 days and fed hay in pens, developed an acute but transient diarrhoea 11–19 days after dosage and before eggs appeared in the faeces. The egg count was greatest on the 21st day, when the diarrhoea was subsiding, and was lowest 12 weeks after infestation. 4 weeks after infestation most of the lambs were putting on normal wt.

—JAS. G. O'SULLIVAN.

STEWART, D. F. (1953). **Studies on resistance of sheep to infestation with** *Haemonchus contortus* **and** *Trichostrongylus* **spp. and on the immunological reactions of sheep exposed to infestation. V. The nature of the "self-cure" phenomenon.**—*Aust. J. agric. Res.* **4,** 100 - 117. [Abst. from author's summary.] **2604**

An oedematous change was present in the mucous membrane of the abomasum or small intestine (depending on the site of attachment of the adult worms), on the day on which a rise in blood histamine occurred after the administration of larvae, *i.e.*, at the time of the "self cure" reaction. It was concluded that this "self-cure" phenomenon was essentially a reaction of the host associated with allergic sensitization and accompanied by the release of histamine. [For preivous work by S. on this subject, see *V.B.* **21,** 1048 and 2310.]

BOLLE, W. (1951). Zur Ätiologie der Hepatitis interstitialis chronica multiplex (parasitaria) des Schweines. **[Parasitic hepatitis of swine.]** —*Zbl. Bakt. I.* (*Orig.*) **157,** 382-384. **2605**

B. examined nematode larvae from the liver of a pig and concluded that they were probably those of a species of *Oesophagostomum*.—M. L. CLARKE.

SOLIMAN, K. N. (1953). **Migration route of** *Dictyocaulus viviparus* **and** *D. filaria* **infective larvae to the lungs.**—*J. comp. Path.* **63,** 75-84. **2606**

No stage of *D. viviparus* could be demonstrated in material from 26 foetuses and 12 calves from cows with parasitic bronchitis. The parasites were absent from the livers, but present in some of the mesenteric lymph nodes from 17 affected cattle. In experimentally infected rabbits, g. pigs and mice, infective larvae of both *D. filaria* and *D. viviparus* were recovered from the mesenteric lymph nodes after 24 hours, and the lungs after 3 days. The subsequent development of larvae into adult worms was traced.—R.M.

SCHWARTZ, B. (1952). **Controlling lungworms of swine.**—*Leafl. U.S. Dep. Agric.* No. 118. pp. 5. **2607**

The use of clean, well-fenced temporary pastures which have good drainage, is the most effective control measure.

—JAS. G. O'SULLIVAN.

SHALKOP, W. T., DAVIS, C. L., SEIBOLD, H. R., ANDERSON, W. A. & MONLUX, A. W. (1953). **Report on investigations of icterus in swine.** [Role of *Ascaris*.]—*N. Amer. Vet.* 34, 257-262. **2608**

Obstruction of the common bile duct by

ascarids was responsible for the jaundice observed in 92% of 361 pigs at a federally inspected abattoir.

TODD, A. C., CROWDUS, D. H. & WYANT, Z. N. (1952). **Experimental embryonation of the egg and development of *Ascaridia galli* in its chicken host.**—*Exp. Parasit.* **1**, 176-183. **2609**

The authors studied the temp. during embryonation of the eggs of *A. galli* and the medium in which this took place. Worms from eggs kept at 85°F. were smaller than those from eggs kept at 65° to 78°F. Worms from eggs in thyroprotein suspensions were larger than the controls when birds 5–6 weeks old were used, but were smaller than controls when 2-week-old birds were fed the eggs in similar suspension.—JAS. G. O'SULLIVAN.

KUME, S. (1952). **[Prevention and treatment of infestation by larvae of *Setaria spp.*]**—*J. Jap. vet. med. Ass.* **5**, 71-74. [In Japanese.] **2610**

Arsenic compounds were more effective than antimony compounds for the prevention of setariasis of the brain. "Spatonin" (a piperadine derivative) has been used in the treatment of the disease in its early stages. For eye infections, surgery and drug therapy were combined.—KOGI SAITO.

SAITO, S. (1952). **[Arsenical compounds in treatment of goat paralysis (Setariasis).]**—*J. Jap. vet. med. Ass.* **5**, 114-117. [In Japanese.] **2611**

The toxicity of arsenical compounds used in the treatment of *Setaria* infestation was tested in 7 goats; using the data obtained, 17 of 18 sheep affected with paralysis due to *Setaria* were cured.—KOGI SAITO.

PARSONS, H. E. (1952). **Nematode chorioretinitis. Report of a case, with photographs of a viable worm.**—*Arch. Ophthal., N.Y.* **47**, 799-800. **2612**

An actively moving filarial worm believed to be an immature *Ascaris* was discovered during a retinal examination of a human patient. It was about as long as the diameter of the optic disk, white, non-segmented and tapered at each end. The macular area was almost completely destroyed. The worm was observed in many areas of the fundus and apparently remained the same size over a period of 3 years. Various treatments were tried without success in an effort to destroy the worm. The appearances are shown in 3 photographs.

This is believed to be the first time that a living subretinal worm has been photographed and reported.—A.S.

GUILBRIDE, P. D. L. (1953). *Syngamus ierei, Physaloptera praeputialis* **and** *Platynosomum fastosum* **from a cat in Jamaica.**—*Vet. Rec.* **65**, 220. **2613**

A cat was found to be harbouring *Pl. concinnum* (*Pl. fastosum*), *S. ierei* and *Ph. preputialis*, none of which had previously been reported from Jamaica.—JAS. G. O'SULLIVAN.

DE JESUS, Z. & MISHKIN, H. H. (1950). **Vermiplex, an effective anthelmintic against hookworms, ascarids and tapeworms.**—*Natural appl. Sci. Bull.* **10**, 297-307. **2614**

When "Vermiplex", a mixture of methylbenzene and dipenthane-70 was given to 50 dogs at a dosage of 0·256 g. dipenthane and 0·216 g. methylbenzene per 2·5 lb. body wt., its anthelmintic efficacy against hookworms, ascarids and tapeworms was 93·7%, 95·7% and 78·9% respectively. It was not toxic and a purgative was not necessary.

—JAS G. O'SULLIVAN.

See also absts. **2663** (parasites of mink); **2729** (report, U.S.A.).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

STÜNZI, H. (1953). Carcinoma renale beim Hund. **[Renal carcinoma in dogs.]**—*Schweiz. Arch. Tierheilk.* **95**, 238-247. [English, French and Italian summaries.] **2615**

A description of 3 cases, with 3 photomicrographs and a review of the literature.

—R.M.

JENNINGS, A. R. (1953). **Blood and visceral changes in canine leukaemia (lymphadenosis).**—*J. comp. Path.* **63**, 85-92. [Abst. from author's summary.] **2616**

An account of 8 cases of canine lymphadenosis and of treatment with urethane and nitrogen mustard.

I. BARRETT, M. K. (1952). **Symposium, immunogenetics and carcinogenesis. Some immunogenetic influences upon transplanted tumors.**—*Cancer Res.* **12**, 535-542.

II. SNELL, G. D. (1952). **Symposium, immunogenetics and carcinogenesis. The immunogenetics of tumor transplantation,**—*Ibid.* 543-546.

III. MILLER, E. C. & MILLER, J. A. (1952). **Symposium, immunogenetics and carcinogenesis.** *In vivo* **combinations between carcinogens and tissue constituents and their possible role in carcinogenesis.**—*Ibid.* 547-556.

IV. CREECH, H. J. (1952). **Symposium, immunogenetics and carcinogenesis. Chemical and immunological properties of carcinogen-protein conjugates.**—*Ibid.* 557-564. **2617**

I, II, III & IV. These papers deal with subjects in the field of "immunogenetics", which, Barrett proposed, should be "rather loosely defined as referring to those areas in which the disciplines of genetics and immunology impinge upon or overlap each other by reason of concept, technics or knowledge". The first paper is concerned mainly with the non-specific resistance to transplantation of tumours in mice produced by the injection of homologous blood. It has been shown that no resistance could be so induced in a mouse of one strain against a tumour originating in that strain, but that it could be against a tumour originating in another strain. A tumour transplanted in susceptible strains of hybrid mice appeared to increase in ability to grow in resistant back-cross strains of mice. The second paper, after referring to the distribution in various strains of mice of the genetic locus which appears to be important in determining susceptibility or resistance to implants, gives a discussion of the enhanced susceptibility to transplants produced by large doses of lyophilised or otherwise killed tumour tissue (small doses having an inhibiting effect), and a comparison of this effect with other possibly related phenomena—the enhancing effect of repeated inoculations of fresh tumour tissue, the "immunological paralysis" (Felton) produced by killed bacterial or bacterial polysaccharides, and the skin-graft susceptibility of fraternal bovine twins. In the third paper it is suggested that from a consideration of the production of liver tumours in rats by azo dyes, the dye metabolite may in some way hinder the normal synthesis of certain liver proteins that are essential for the control of the growth of the liver cell. The fourth paper describes experimental work bearing on the possibility of immunization against carcinogenesis, dealing with the combination of various chemical carcinogens with protein to form well-defined antigens, and the production of specific antibodies.

—E. COTCHIN.

KENZY, S. G. (1952). **Studies in avian neoplasia. I. A quantitative evaluation of neutralizing antibodies for the Rous sarcoma virus in avian serums.**—*Amer. J. vet. Res.* 13, 388-394. [Author's summary slightly modified.] **2618**

A description of a method for evaluating the quantity of neutralizing antibodies for Rous sarcoma virus in avian sera. No inconsistencies were observed in testing over 1,000 sera.

DARCEL, C. LE Q. (1950). **Studies on the avian leukosis complex. I. Observations on the leuko-agglutination test for the avian leukosis complex.**—*Vet. Rec.* 62, 621-622. **2619**

DARCEL, C. LE Q. (1953). **Studies on the avian leukosis complex. II. Some observations on the behaviour of three transplantable avian lymphoid tumours.**—*J. comp. Path.* 63, 112-130. **2620**

DARCEL, C. LE Q. (1953). **Studies on the avian leukosis complex. III. A note on the maintenance of avian lymphoid tumour strains.** —*Ibid.* 131-135. **2621**

I. D. used the leuko-agglutination test developed by Kissling [*V.B.* 17, 2325] and obtained similar results.

II. The behaviour of 3 transplanted avian lymphoid tumours was studied in experiments utilizing cross-bred chicks, inoculated s/c or i/p for the most part in the first few weeks of life. The frequency with which these strains killed chicks and the time taken to do so were recorded. A few birds which recovered after the first inoculation developed resistance to subsequent inoculation.

III. The effect of freezing to −70°C. and subsequent thawing on suspensions of avian lymphoid tumours was investigated. The reduction in tumour-producing activity as a result of freezing was lessened by the addition of glucose to the suspensions. Once frozen, suspensions remained uniformly active for many days, in some cases for 160 days.—R.M.

NUTRITIONAL AND METABOLIC DISORDERS

BARTLEY, E. E., FOUNTAINE, F. C., ATKESON, F. W. & FRYER, H. C. (1953). **Antibiotics in dairy cattle nutrition. I. The effect of an aureomycin product (Aurofac) on the growth and well-being of young dairy calves.**—*J. Dairy Sci.* 36, 103-111. **2622**

Calves were raised under unsatisfactory housing conditions on a standard diet. Those

receiving Aurofac supplements of 3 g./100 lb. body wt. gained more wt. than controls (228% birth wt. at 12 weeks as against 190%) and "scours" and "colds" were much reduced. When the supplement was withdrawn at 7 weeks the rate of wt. gain decreased, but disease incidence did not increase to that of the controls.
—JOHN SEAMER.

CHANCE, C. M., HUFFMAN, C. F. & DUNCAN, C. W. (1953). **Antibiotics in rumen digestion and synthesis. I. The effect of aureomycin on rumen digestion and the passage of nutrients from the rumen during specific intervals after feeding.**—*J. Dairy Sci.* **36,** 253-259. **2623**

Rumen contents of 2 steers fed 0·5 g. and 1 g. per day of aureomycin were analysed. Digestion of the ether extract was impaired at both levels of dosage, and of dry matter at the higher level.—JOHN SEAMER.

BRAUDE, R. & JOHNSON, B. C. (1953). **Effect of aureomycin on nitrogen and water metabolism in growing pigs.**—*J. Nutr.* **49,** 505-512. [Authors' summary copied *verbatim.*] **2624**

Using a purified diet in the feeding of young pigs, the addition of aureomycin at the level of 20 mg/kg of ration brought about the expected improvement in rate of growth and increase in efficiency of food utilization. However, no effect on nitrogen retention was observed, even though there was an increase in efficiency of food utilization. Considerably higher urinary excretions (urinary water losses) were observed with animals receiving the antibiotic.

ANON. (1952). **Vitamin B_{12} and antibiotics in animal nutrition. Annotated bibliography. Dec. 1952.** pp. 78. Rahway, N.J.: Merck & Co., Inc. **2625**

Four hundred articles, mostly American, are annotated and an author index provided. Cobalt and vitamin B_{12}, choline, methionine, betaine, folic acid, aureomycin and penicillin as supplements in the nutrition of poultry, pigs and calves are dealt with.

Methods of assay, occurrence, metabolism and function of the compounds are described.
—JOHN SEAMER.

JOHANSSON, K. R., PETERSON, G. E. & DICK, E. C. (1953). **Effects of dietary aureomycin upon the intestinal microflora and the intestinal synthesis of vitamin B_{12} in the rat.**—*J. Nutr.* **49,** 135-152. [Authors' summary modified.] **2626**

Feeding of aureomycin stimulated the growth of young male albino rats maintained on purified rations deficient in methionine or vitamin B_{12}, but did not affect the growth of rats fed a normal diet.

Dietary aureomycin caused a rapid, statistically significant change in the intestinal microflora of the rat, particularly among the coliform, enterococcus and lactobacillus groups of bacteria. A large portion of the flora, notably the coliform organisms, developed resistance to aureomycin. These changes occurred in faecal droppings as well as in the caecum and ileum.

Vitamin B_{12} was synthesized in the intestines of rats fed rations (with or without aureomycin) deficient in this factor. No effect of aureomycin on the concentration of vitamin B_{12} in the intestinal tract was conclusively demonstrated.

BRANION, H. D., ANDERSON, G. W. & HILL, D. C. (1953). **Antibiotics and the growth of ducks. (With a review of possible mechanisms by which antibiotics stimulate growth).**—*Poult. Sci.* **32,** 335-347. [Authors' summary slightly modified.] **2627**

The feeding of aureomycin, penicillin and terramycin at levels of 10, 25 and 100 p.p.m. in the diet and of streptomycin at 25 p.p.m. had no effect upon the growth or thriftiness of young ducks.

The addition of the 4 antibiotics at a level of 25 p.p.m. to the diet effected some lowering of the pH of the caecal contents. Their addition also resulted in modifications in the caecal microflora but the specific effect of the various antibiotics was not the same.

ELAM, J. F., JACOBS, R. L., TIDWELL, W. L., GEE, L. L. & COUCH, J. R. (1953). **Possible mechanism involved in the growth-promoting responses obtained from antibiotics.**—*J. Nutr.* **49,** 307-317. [Authors' summary copied *verbatim.*] **2628**

Data presented in this report show that the administration of an antibiotic produced a significant increase in growth and a significant decrease in the total number of clostridia per gram of feces.

Earlier reports are confirmed to the effect that penicillin, aureomycin, bacitracin, and terramycin stimulated the growth of chicks.

Arsanilic acid and sodium arsanilate have been shown to increase growth and decrease the total number of clostridia per gram of feces when fed to chicks.

FROST, D. V. (1953). **Considerations on the safety of arsanilic acid for use in poultry**

feeds.—*Poult. Sci.* **32,** 217-227. [Author's summary modified.] **2629**

Poultry showed a high degree of tolerance to arsanilic acid (*p*-aminophenylarsonic acid). The ratio of toxic level to maximal permissible level was at least 5:1.

Arsenic retention was greatest in the liver and least in muscle, and was proportional to the level fed. The stored arsenic disappeared most rapidly from the liver, and less rapidly from the muscle and skin, following removal of the arsenical from the diet. Arsenic retained by chickens did not appear to represent a hazard to the consumer, but the inheretent toxicity of arsenicals must, nevertheless, be recognized so that proper handling will be ensured. A direct colorimetric method was used for the determination of arsanilic acid in feeds.

FRÖLICH, A. (1952). **Experiments with Swedish rape seed meal for growing chicks and egg-laying hens.**—*Kungl. Lantbrukhögsk. Ann.* **19,** 205-208. [In English. Author's summary modified.] **2630**

In a further series with growing chicks the effect of untreated and ethanol-extracted rape seed meal in the diet was studied. In both series there was a growth-depressing effect if the amount of rape seed meal exceeded 5%. This was more pronounced in the series with untreated rape seed meal than with ethanol-extracted. The same difference was found for thyroid weights, from which it was evident that the ethanol extraction had removed the anti-thyroid active principle to some extent.

The feedings of even small quantities of rape seed meal may have a deleterious effect on egg production.

MICHAEL, D. T. (1953). **Rape or cole: some obervations on its management in relation to the health of sheep grazing on it.**—*Vet. Rec.* **65,** 231-232. **2631**

It was thought that rape provided a valuable supplement to the diet of sheep on marginal farms. Feeding of rape should be combined with access to permanent pastures.

—G. B. S. HEATH.

BARNETT, A. J. G. & DUNCAN, R. E. B. (1953). **Acetic acid in fresh grass.** [Correspondence.] —*Nature, Lond.* **171,** 478. **2632**

Acetic acid was isolated from juice extracted from fresh minced grass. No other lower fatty acids were isolated.—R. MARSHALL.

DODSWORTH, T. L. & CAMPBELL, W. H. McK. (1952). **Effect of the percentage of dry matter in the diet on the dry-matter intake in ruminants.** [Correspondence.] — *Nature, Lond.* **170,** 1128-1129. **2633**

Two sheep consumed similar amounts of normal silage and silage with high water content respectively. A disproportionate dry matter intake ensued. A critical dry matter content of succulent rations was postulated to obtain maximum performance.—JOHN SEAMER.

GOULD, G. N. (1952). **Problems of animal health associated with grassland and the feeding of fodder crops.**—*J. Fmrs' Cl. Lond.* Part 8. pp. 130-141. Discussion pp. 141-149. **2634**

A practical talk and discussion. Hypomagnesaemia, bloat, the need for fibre, and grassland management received most attention.

—JOHN SEAMER.

FRANKLIN, M. C. (1952). **Maintenance rations for Merino sheep. I. A comparative study of daily and weekly feeding on rations containing high proportions of wheat and several proportions of roughage to concentrate.**—*Aust. J. agric. Res.* **3,** 168-186. **2635**

Groups of Merino wethers were fed on one of four rations composed of wheat chaff and wheat mixed in various proportions, with limestone added. The groups were paired, one of each pair being fed once a week and the other being fed daily. It was shown that daily feeding of the sheep at levels sufficient for survival was less satisfactory than weekly feeding at the same level.—R.M.

FERRANDO, R. & SOMON, A. (1953). Remarques à propos des fourrages provenant des régions où sévit l'hématurie essentielle. **[Characacters of fodder plants from areas where chronic bovine haematuria is endemic.]**—*Bull. Acad. vét. Fr.* **26,** 79-82. **2636**

The disease appeared to have increased since the second world war and to be associated with areas where protein, calcium and phosphorus in the forage were deficient. Occurrence of the disease in Germany, however, did not appear to be associated with districts where the composition of the soil might cause such deficiencies.—R. MARSHALL.

BULL, L. B. (1953). **Untoward effects of some pasture plants on the grazing animal.**—*Aust. vet. J.* **29,** 2-7. **2637**

B. dealt with the commoner diseases in Australia associated with sown or improved pastures and indicated the deficiencies of existing knowledge of these diseases. Scouring may be a sign of molybdenum excess or high water content of the pasture. The cause and preven-

tion of bloat remains to be determined. Enterotoxaemia increases in incidence on improved pasture. The part that pastures and their management can play in the control of helminthiasis is still a problem. The reason for the development of hypomagnesaemia in grass tetany is still obscure. Perennial rye-grass staggers still requires elucidation. Staggers on *Phalaris tuberosa* pastures is a more serious condition, but recent investigations have shown that cobalt is a satisfactory preventative. Sudden death in sheep may also occur on *Phalaris* pasture in autumn. Facial eczema occurs on rapidly growing rye-grass pasture and is due to a hepatotoxic substance in the plant. Nitrite poisoning may occur when oats and wheat crops are grazed. Rickets occurs in some areas in animals on oats and green pastures and a rachitogenic factor has been isolated. The infertility-dystocia-prolapse complex observed in Western Australia among sheep on subterranean clover was discussed. Subterranean clover, under some conditions, also enhances the uptake of copper by sheep which graze it and so facilitates the development of chronic copper poisoning. Some other plants, *e.g.* oaten hay and *Heliotropium europaeum* have the same effect. Lucerne, on the other hand, depresses the uptake of copper. The factors involved are under investigation and B. discussed the evidence to date.—D. C. Blood.

Reinach, N., Louw, J. G. & Groenewald, J. W. (1952). **The effect of body stores and of method of supplementation on the efficiency of calcium and phosphorus utilization by sheep.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 85-91. [Authors' summary modified.] **2638**

Ca and P metabolism was investigated in balance studies on two groups of sheep deficient in these minerals. During the first 10 days on a ration supplemented with bone-meal, the inorganic P of the blood rose sharply from approx. 2·0 to 5·0 mg. per 100 ml. of blood, remaining approx. at this level to the end of the experiment.

Under the conditions of the experiment the method of bone meal supplementation had no influence on the efficiency of utilization of Ca and P: the authors discussed the implication of this in the problem of phosphate feeding under practical conditions.

Ca and P utilization dropped considerably in the course of the 80 days on the enriched ration, retention figures for Ca decreasing from 22·5 to 12·7% and those for P from 53·1 to 32·2%.

Because no observations were made on the extent of replenishment during the period of bone meal feeding, the final interpretation of these results depends upon the outcome of further investigations.

Nishimura, H. (1953). **Zinc deficiency in suckling mice deprived of colostrum.**—*J. Nutr.* **49,** 79-97. **2639**

New-born mice suckled by foster-mothers in later stages of lactation (usually 13 to 18 days) developed specific disorders, the frequency and severity of which increased as the foster-mothers entered on the later stages of lactation. New-born mice suckled by their own dams for 2·5 to 4 days before transfer to foster-mothers were normal; others that were fed by foster-mothers for 3·5 to 5·5 days and then returned to their dams usually developed disorders consisting of retarded growth and ossification, accelerated eruption of incisors and separation of eyelids, alterations of the dorsal skin (alopecia, thickening and hyperkeratinization of the epidermis with no inflammatory signs, thickening of the corium, hypoplasia of the subcutis with increased mast cells and histiocytes), rosary-like tail, clubbed digits and deformed nails, squamous transformation of the palpebral epithelium and moderate congestion in certain viscera. Chemically, there was an increase in total body-water, ash, and nitrogen, a diminution in fat, and a pronounced reduction in zinc.

Oral administration of inorganic zinc prevented these disorders, while vitamin B_1, certain vitamin B_2 compounds, liver pap and yeast had a mitigating effect. Therefore it was concluded that colostrum has a much higher content of zinc than later milk, and that deprivation of colostrum leads to manifestations of zinc deficiency in unweaned mice.—A.S.

Parr, W., O'Neill, T. & Krebs, A. (1953). **A study of the X-irradiation protection afforded by cobalt.**—*Science.* **117,** 155-156. **2640**

Mice fed on a cobalt rich diet were found to be resistant to X irradiation. Possible causes were mentioned.—John Seamer.

Hoekstra, W. G., Pope, A. L. & Phillips, P. H. (1952). **Response of cobalt-deficient sheep to intravenously administered vitamin B_{12}.**—*J. Nutr.* **48,** 431-441. **2641**

The authors presented evidence which they considered to indicate that lack of cobalt *per se* is not important; it is the resulting lack of vitamin B_{12} which causes damage. Symptoms

of cobalt pine can be completely removed by intravenous injections of vitamin B_{12}.

—G. B. S. HEATH.

ROTHERY, P., BELL, J. M. & SPINKS, J. W. T. (1953). **Cobalt and vitamin B_{12} in sheep. I. Distribution of radiocobalt in tissues and ingesta.**—*J. Nutr.* **49**, 173-181. [Authors' summary modified.] **2642**

The authors presented data on cobalt concentrations in the tissues and ingesta of lambs fed natural and semi-purified diets, and receiving, respectively, 50 and 500 μg. of labelled cobalt daily over periods of 90 to 123 days.

Cobalt concentrations in the various organs reflected the levels of intake and greatly exceeded those reported by Comar & Davis [*V.B.* **20**, 1353] for cattle fed limited amounts of cobalt. The highest concentrations of cobalt were found in liver, heart, kidney and pancreas, although muscle, by reason of its relatively greater mass, equalled liver as a site of total cobalt storage. The tissue of the small intestine contained considerably more cobalt than the other gastro-intestinal tissues.

The authors explained the possible advantage of feeding radio-cobalt regularly over a long periods in experiments quantitatively assessing the roles of cobalt and vitamin B_{12} in ruminants.

WILSON, J. G., ROTH, C. B. & WARKANY, J. (1953). **An analysis of the syndrome of malformations by maternal vitamin A deficiency. Effects of restoration of vitamin A at various times during gestation.**—*Amer. J. Anat.* **92**, 189-217. [Authors' summary modified.] **2643**

Female rats were maintained on vitamin A deficient diets before and during early pregnancy. One group was allowed to continue throughout pregnancy in the deficient state while 6 other groups were given single large doses of vitamin A on the 10th, 11th, 12th, 13th, 14th, or 15th day.

The offspring of females deficient throughout pregnancy frequently exhibited congenital malformations, which occurred with sufficient regularity to be considered as comprising a syndrome.

The administration of vitamin A to the deficient dams at progressively earlier times during pregnancy resulted in a progressive reduction in offspring affected by malformation. Associated with this was a change in the composition of the typical vitamin A-deficiency syndrome. To a limited extent the types of defects, and to a considerable extent the relative percentage incidence of the various types, underwent change. It was concluded that the malformations resulting from maternal vitamin A deficiency were determined during the period of active organ formation, rather than at an earlier period as has been established for other teratogenic agents.

BROWN, F. (1953). **Occurrence of vitamin E in cod and other fish-liver oils.** [Correspondence.]—*Nature, Lond.* **171**, 790-791. **2644**

Cod-liver oil contained about 30 mg. per 100 g. of α-tocopherol, which probably acted as a natural anti-oxidant in cod and other fish oils. The fact that vitamin E deficiency symptoms occur in animals when cod-liver oil is the only source of vitamin E may be due to an action of the highly unsaturated acids rather than to deficiency of the vitamin.—N. DEAN.

HILDEBRANDT, K. (1953). Vitamin-H-Mangel eines Hundes. **[Biotin deficiency in a dog.]** —*Dtsch. tierärztl. Wschr.* **60**, 154-155. **2645**

H. cured paronychia and hyperkeratosis in an undernourished dog by substituting an improved diet incorporating a preparation containing biotin.—A.S.

BROWN, W. O. (1953). **Effect of dietary penicillin on blood composition and estrogen-induced oviduct growth in the folic-acid deficient chick.** [Correspondence.]—*Nature, Lond.* **171**, 845-846. **2646**

The inclusion of penicillin in the diet of folic-acid-deficient chicks increased Hb. levels. Either penicillin or folic acid increased the oviduct wt. in chicks deficient in oestrogen.

—N. DEAN.

LEEMANN, W. (1953). Der Nikotinsäuregehalt im Blute des gesunden und kranken Pferdes. **[Nicotinic acid content of the blood of normal and diseased horses.]**—*Schweiz. Arch. Tierheilk.* **95**, 228-237. [English, French and Italian summaries.] **2647**

The method of assay used was that of Barton-Wright (1945), which depended on estimation of lactic acid produced by the lactobacillus in the presence of nicotinic acid or its amide. Average normal value for 9 horses was 8·54 μg. per ml. of blood (or $1{\cdot}22 \times 10^9$ μg. per r.b.c.). In broncho-pneumonia (15 cases) and pupura haemorrhagica (5 cases) this figure was reduced to 4·12–5·17 μg. per ml. Therefore it would appear that the administration of additional nicotinic acid was indicated in those diseases.—R.M.

VAN KOETSVELD, E. E. (1953). **Differences in the vitamin B_{12} content of cow's milk during**

the last month indoors and the first week at pasture. [Correspondence.]—*Nature, Lond.* **171,** 483. **2648**

Analysis of Friesian cows' milk showed average values of vitamin B_{12} during indoor feeding and for the first week on pasture to be 6·31 mg. and 11·10 mg. per litre respectively.
—JOHN SEAMER.

KAPAINEN, W. J., TELKKÄ, A. & MUSTAKALLIO, K. K. (1953). **Vitamin B_{12} content of calf thymus extract.** [Correspondence.]—*Nature, Lond.* **171,** 845. **2649**

The growth-stimulating activity of calf thymus extracts for rats may be accounted for by their vitamin B_{12} content.—N. DEAN.

MOUSTGAARD, J. (1952). **The importance of cyanocobalamin** [vitamin B_{12}] **for the fertility in sows and gilts.**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **3,** 71-80. [In English. French, German and Danish summaries.] **2650**

From feeding experiments on Landrace pigs M. concluded that sows and gilts on a purely vegetable diet produce smaller and weaker litters than those receiving supplements of animal protein or aprofact [presumably a proprietary product; origin and composition not stated]. This he attributed to a deficiency of vitamin B_{12}. No clinical abnormality or effect on growth or sexual development was noted in animals not receiving a supplement.
—J. T. DONE.

LECOQ, R. (1952). A propos de la notion de vitamine P. La fragilité vasculaire avitaminique. **[Vitamin P and vascular fragility.]** —*C. R. Acad. Sci., Paris.* **235,** 585-587. **2651**

L. considered that vitamin P was only one of several factors affecting vascular fragility; and only when the other factors were eliminated, as in his former work [*C. R. Soc. Biol.* **143,** 454], could the case for vitamin P be considered.—A. SEAMAN.

SHAW, J. C., HATZIOLOS, B. C., LEFFEL, E. C., CHUNG, A. C. & GILBERT, J. (1953). **Studies on ketosis in dairy cattle. XVI. The pituitary-adrenal cortical syndrome.** — *N. Amer. Vet.* **34,** 251-256. [Authors' summary slightly modified.] **2652**

Adrenocorticotropin (A.C.T.H.), cortisone and compound F (hydrocortone), in adequate dosage, produced the most rapid and most certain cure in studies on approx. 150 cases of ketosis. No failures were encountered in uncomplicated cases. Sodium propionate was less effective than the above but much more effective than sodium acetate. A.C.T.H., cortisone and compound F were so effective that glucose injections given as supplement were not helpful. Glucose is to be recommended as the primary treatment when propionate and acetate are used without cortisone or A.C.T.H.. Preliminary work indicates that acetate feeding will not prevent the development of ketosis. It still remains to be determined whether propionate feeding will be helpful in preventing the development of ketosis.

BOWLBY, G. L. & COMFORT, C. F. (1953). **Cortisone in the treatment of ketosis.**— *Canad. J. comp. Med.* **17,** 79-82. **2653**

Cortisone acetate (0·5 g. by i/m inj.) was used in 29 cases of ketosis, 24 of which were severe, with good results. No evidence of mastitis or activation of other latent infections was observed.—R. GWATKIN.

See also absts. **2671** (antivitamin factor in *Equisetum*); **2676** (photosensitization and carbohydrate metabolism); **2709** (effect of thiouracil feeding on seminal characteristics in bulls); **2736** (book, water metabolism); **2738** (book, metabolism).

DISEASES, GENERAL

BELL, W. B. (1953). **The relative toxicity of the chlorinated naphthalenes in experimentally produced bovine hyperkeratosis (X-disease).**—*Vet. Med.* **48,** 135-140 & 146. [Author's summary modified.] **2654**

The symptoms and lesions produced by various purified chlorinated naphthalenes were similar to those of bovine hyperkeratosis, although the prolonged chronic disease was produced in only one instance. Di- and trichloronaphthalene were not toxic at the total dose of 14 and 12 mg./lb. body wt. respectively. Tetrachloronaphthalene appeared to be slightly toxic. Penta-, hexa- and heptachloronaphthalene were consistently toxic; pentachloronaphthalene is probably less toxic than the latter two. As little as 2·5 mg./lb. body wt. of hexa- and heptachloronaphthalene caused the production of symptoms. Octachloronaphthalene given in suspension did not have a toxic effect, but 5·0 mg./lb. body wt. given in solution produced symptoms. Control calves and calves in the parent herds, which were fed the same ration as the experimental calves, showed no hyperkeratosis or dietary deficiencies during the period of these observations.

TUCKER, R. (1953). **Teratomorphic dentition in cattle.**—*Aust. vet. J.* **29**, 31. 2655

T. described malformation of the roots of the first premolars in two cows with actinomycosis.—K. G. JOHNSTON.

SOFRENOVIĆ, D. R. (1952). **[Cirrhosis of the liver in piglets.]**—*Acta Vet., Belgrade.* **2**, No. 2. pp. 161-173. [In Serbian. German summary.] 2656

In piglets it is often possible to observe cirrhotic changes in the liver, characterized by greyish-white discolorations on the surface of the organ. They do not appear to exert any influence on the general condition and health of the animals. The cause of the condition has not been determined.—I. MARTINI.

SCHULZ, K. C. A. (1953). **A unique case of a sand-laden liver in a pig.**—*J. S. Afr. vet. med. Ass.* **24**, 43-48. [Abst. from author's summary.] 2657

This paper deals with an uncommon case where fine sand was found in enormous quantities in the extensively dilated bile ducts of a pig. The macroscopical description of the liver is given together with the histological report on various liver sections.—R.M.

HOFMEYR, C. F. B. (1953). **A remarkable cause of acute abdomen in a dog.**—*J. S. Afr. vet. med. Ass.* **24**, 49-51. [Abst. from author's summary.] 2658

A report of simultaneous strangulation of the oesophagus and duodenum by the gastrosplenic ligament of a displaced spleen in a dog.

I. TUCKER, R. (1953). **Dental attrition in the wild dog.**—*Aust. vet. J.* **29**, 27-29. 2659

II. TUCKER, R. (1953). **Minimising of the articular facies of the glenoid cavity in the canine cross-bred.**—*Ibid.* 29-31. 2660

I. Attritional changes in the dentition of a wild dog were described in detail along with pathological and odontological peculiarities of the case. The dental abnormality could be partially explained by the presence of congenital malformation in the glenoid cavity.

II. The morphology of the glenoid cavity in the dog, and the abnormalities of this structure mentioned in the previous paper [I *supra*] were described in detail.—K. G. JOHNSTON.

BETTLEY, F. R. & FAIRBURN, E. A. (1953). **Cat-scratch disease. The intradermal test in controls.**—*Lancet.* **264**, 520-521. 2661

An antigen prepared from a young woman with "cat scratch fever" was used to test 40 human patients with a variety of skin disorders, all of whom had kept a cat at some time in their lives but gave no history suggestive of "cat scratch fever". Positive reactions to a single intradermal test were evinced in 3 patients.

—J. T. DONE.

DEBRÉ, R., VAN BOGAERT, L., THIEFFRY, S. & ARTHUIS, M. (1952). Accidents nerveux de la maladie des griffes du chat. **[Nervous manifestations in cat-scratch fever.]**—*Bull. Acad. nat. Méd.* **136**, 454-459. 2662

The authors drew attention to the possibility that in man "cat-scratch fever" may have neurological complications. They gave in some detail the case histories of 2 patients with nervous sequelae and also quoted from the observations of other observers on this condition.—J. T. DONE.

GORHAM, J. R. & GRIFFITHS, H. J. (1952). **Diseases and parasites of minks.**—*Fmrs' Bull. U.S. Dep. Agric.* No. 2050. pp. 41. 2663

This bulletin gives an account of bacterial and viral diseases of mink. Canine distemper is most important. Steatitis and nutritional anaemia (acidosis) cause losses. Among the parasites of importance in the U.S. are the larvae of the flesh-fly (*Wohlfahrtia spp.*); the mink flea (*Ceratophyllus vison*), and the flukes *Paragonimus kellicotti* and *Metorchis conjunctus*. Modern husbandry methods have reduced the incidence of coccidiosis.

—JAS. G. O'SULLIVAN.

HORVÁTH, Z. (1953). **[Follicular keratosis in rabbits.]**—*Acta vet. hung.* **3**, 91-95. [In Russian. German summary.] 2664

H. gave a clinical and histological description of follicular keratosis in a rabbit's ear and on the shoulders. The lesions formed hard projections 20 mm. long. Attempts at transmitting the infection and at treatment failed. Four photographs of lesions were shown.—F. A. A.

KAWASHIMA, H., MOCHIZUKI, H., SATO, T., MIFUNE, R. & HANAKI, T. (1952). **[Studies of so called infectious diarrhea of fowl similar to avian monocytosis.]**—*J. Jap. vet. med. Ass.* **5**, 1-7. [In Japanese.] 2665

In the summer of 1949 an unknown disease of laying hens occurred, characterized by the sudden onset and rapid spread of diarrhoea through the flock. No causative agent was isolated. On the basis of the epidemiology, symptoms, histopathology, and haematology, this disease appeared to be similar to "pullet disease".—KOGI SAITO.

FRITZSCHE, K. (1952). Die Histopathologie der Encephalomyelitis und Encephalomalacia

avium. **[Histopathology of avian encephalomyelitis (epidemic tremor) and avian encephalomalacia (vitamin E deficiency).]**—*Dtsch. tierärztl. Wschr.* **59**, 310-312. **2666**

The lesions of infectious avian encephalomyelitis are: degeneration of the nerve cells, proliferation of glia cells, vascular infiltration in the brain and distinct, mostly round shaped lymphatic follicles in the musculature of the proventriculus and in the pancreas.

The lesions of non-infective avian encephalomalacia (vitamin E deficiency) are, macroscopically, an oedema of some parts of the brain, especially of the cerebellum and, microscopically, in these parts a sieve-like structure of the white matter and haemorrhages in the cerebellum together with a degeneration of the Purkinje's cells and a proliferation of the adventitial cells of the capillaries of the cerebrum.—H. Behrens.

Hjärre, A. (1953). Über ätiologische und pathogenetische Verhältnisse bei der sogenannten toxischen Leberdystrophie bei Tieren. **[Aetiology and pathogenesis of toxic liver dystrophy in animals.]**—*Dtsch. tierärztl. Wschr.* **60**, 141-145. **2667**

H. stated that liver dystrophy can usually be traced to the inactivation of an enzyme system resulting from the destruction or absence of some necessary factor. Where the factor is chemically inactivated the degeneration should be termed an intoxication, while a condition caused by an insufficient supply of a factor should correctly be described as a deficiency disease.

Hypoxydosis resulting from such conditions as anaemia, circulatory failure, or a reduced supply of atmospheric oxygen, is frequently the cause of deficiency disease in the liver.

—A.S.

Schilling, J. A., McCoord, A. B., Clausen, S. W., Troup, S. B. & McKee, F. W. (1952). **Experimental ascites. Studies of electrolyte balance in dogs with partial and complete occlusion of the portal vein and of the vena cava above and below the liver.**—*J. clin. Invest.* **31**, 702-710. **2668**

Readings were made of sodium, potassium, chloride and water balance. Chronic liver congestion seemed to be associated with the sodium accumulation that occurred in this experiment. Potassium, even on high intake, appeared to be under a different control, and seemed not to accumulate. Chloride excretion tended to parallel that of sodium.—B. G. Clarke.

Milčetić, I. (1951). Elektrokardiografsko ispitivanje srčanih aritmija konja. **[Electrocardiographical studies in horses.]** — *Vet. Arhiv.* **21**, 368-387. [In Croat. German summary.] **2669**

M. classified into 2 main groups 50 cases of cardiac arrhythmia in saddle and harness horses by their electrocardiograms, using a portable apparatus with electrodes on the right prescapular and apical heart regions. The groups comprised: (a) depression of the stimulus, 12 cases and (b) interference with conduction of the stimulus, 38 cases. Five electrocardiograms were reproduced.—I. Martini.

See also absts. **2730-2731** (reports, U.S.A.); **2735** (book, diseases of cats).

POISONS AND POISONING

Holm, G. C., Eveleth, D. F. & Dinusson, W. E. (1953). **Trichloroethylene soybean meal poisoning in sheep.**—*J. Amer. vet. med. Ass.* **122**, 380-382. [Abst. from authors' summary.] **2670**

Toxic batches of trichlorethylene extracted soya-bean meal produced sickness and death in ewes and lambs, with symptoms and lesions characteristic of trichlorethylene poisoning. The typical leucocyte picture seen in cattle with this poisoning was absent. Nicotinamide may be of value in treatment. Expeller-type soyabean meal was not toxic.—R.M.

Forenbacher, S. (1951). Otrovanje konja preslicom (Equisetum L.) i kompleks vitamina B. II. Biokemijska istraživanja o ulozi B_1-vitamina u patogenezi otrovanja. **[Equisetum poisoning of horses and the vitamin B complex. II. Role of vitamin B_1 in the pathogenesis of poisoning.]**—*Vet. Arhiv.* **21**, 497-547. [Abst. from English summary.] [For part I, see *V.B.* **22**, 197. That paper was, however, incorrectly indexed. The title should read as follows: Forenbacher, S. (1950). Otrovanje konja preslicom (*Equisetum* L.) i kompleks vitamin B. I. Eksperimentalna istraživanja i klinička iskustva. [*Equisetum* **poisoning of horses and the vitamin B complex. I. Experimental and clinical work.**]—*Vet. Arhiv.* **20**, 405-471. [In Croat. Abst. from English summary.]] **2671**

In 6 horses fed hay containing *Equisetum* the carbohydrate metabolism was impaired in the same way as in thiamine deficiency. Glucose tolerance and *in vitro* blood glycolysis were de-

creased, especially in the first 2 hours after ingestion. Liver and muscle glycogen fell. The pyruvic acid level in the blood rose to 1·52 mg.%, coinciding with the appearance of grave symptoms. Factors increasing the pyruvic acid level in the blood were cold, muscular strain and high carbohydrate diet. Oxalic acid levels followed a similar course. Blood phosphates increased to 13 mg.% and blood potassium to 50 mg.%, while potassium in the liver and muscles fell. The alkaline phosphatase levels rose in serum and c.s.f., as did cholinesterase. The symptoms and biological changes developed rapidly, and were reversed in 24–48 hours by thiamine, given parenterally in much larger doses than those required in deficiency. This indicates the presence of a potent antivitamin factor in *Equisetum*.

Riboflavin and nicotinic acid have no effect on the poisoning.—N. DEAN.

I. CRAWSHAW, H. A. (1953). **Rape blindness.** [Correspondence.]—*Vet. Rec.* 65, 254. 2672
II. DALTON, P. J. (1953). **Rape blindness.** [Correspondence.]—*Ibid.* 298. 2673

I. Blindness associated with grazing on rape appeared to be common among steers in Berkshire, England.

II. A note on an outbreak of blindness in heifers associated with grazing on rape.

—G. B. S. HEATH.

CLARK, R. (1952). **Studies on the pharmacology and toxicology of acovenoside A.**—*Onderstepoort J. vet. Res.* 25, No. 4. pp. 69-74. 2674

This glycoside, the poisonous principle of the bush *Acokanthera venenata,* was found to cause death from cardiac arrest in dogs and goats. The lethal dose for both species was in the neighbourhood of 0·5 mg. per kg. body wt. A cumulative effect was observed. Lesions were similar to those found in heartwater but characteristic rigid systole of the ventricles distinguished acovenoside poisoning.

—R. MARSHALL.

KÖNIG, H. & STAFFE, A. (1953). **Beitrag zur Wirkung des Solanins auf Blutbild und -Katalase beim Schaf. [Effect of solanin on blood picture and blood catalase in sheep.**—*Dtsch. tierärztl. Wschr.* 60, 150-153. 2675

When a ewe weighing 40 kg. was given 4 g. pure solanin *per os* there followed a fall in the Hb. content of the blood which was compensated after 6 hours by an increase in the number of r.b.c. A dose of 9 g. to the same animal 2 months later led to an increase both in the number of r.b.c. and in the Hb. content, but after 2 days there was a significant decrease, inferred by the authors to result from exhaustion of the r.b.c. reserves.

An i/v inj. of 2 g. of solanin given some months later to the same animal produced granular basophilic degeneration of the r.b.c. and death after 30 min.—A.S.

JAMIESON, N. D. & SWAN, J. B. (1953). **Photosensitivity diseases in New Zealand. VII. The application of the glucose-tolerance test to sheep and some aspects of carbohydrate metabolism in Southdown congenital photosensitivity.**—*N.Z.J. Sci. Tech.* Sect. A. 34, 436 - 444. [Abst. from authors' summary.] 2676

The authors applied an i/v glucose-tolerance test to sheep, and determined normal values for the Southdown and Romney breeds.

Animals used in studies involving determinations of blood glucose must be handled quietly to avoid the effects of excitement.

There was no difference in glucose tolerance between normal and congenitally photosensitive Southdown sheep.

Measurements of the blood-glucose response to i/v adrenaline and insulin indicated an inability of the liver of photosensitive animals to mobilize and supply glucose to the blood stream. The observed effect was small, but indicated the presence of a liver dysfunction involving glucose metabolism in congenital photosensitivity in Southdown sheep.

See also absts. 2637 (dangerous pasture plants); 2654 (relative toxicity of chlorinated naphthalenes); 2696 (poisoning in man with cheese containing metallic salts); 2731 and 2733 (reports, U.S.A.).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

DILLING, W. J. [M.B., Ch.B.Aberd., M.P.S. (Hon.), Prof. of Pharmacology & General Therapeutics, Liverpool University.] (1951). **The pharmacology and therapeutics of the materia medica. (Bruce and Dilling's "Materia Medica and Therapeutics".)** pp. xxxii + 598. London, Toronto, Melbourne, Sydney, and Wellington: Cassell & Co. Ltd. 19th Edit. 21s. 2677

This 19th edition has been thoroughly revised to conform with the official preparations of the British Pharmacopoeia 1948. In bringing the work up to date for the requirements of students and practitioners of medicine, obsolete

remedies have been removed and the essential facts concerning many new and valuable drugs have been introduced, such as for example, streptomycin in TB., aureomycin and chloramphenicol in rickettsial diseases and typhoid, vitamin B_{12} and folic acid in macrocytic anaemias, nitrogen mustard and radio-active phosphorus in leucaemias, dimercaprol in metallic poisoning, and the recent anodynes, hypnotics and local anaesthetics.

—E. MARSH JONES.

I. HIRSCH, J. G. (1953). **The antimycobacterial activity of various amines related to spermine in chemical structure.**—*J. exp. med.* **97**, 323-325.

II. HIRSCH, J. G. (1953). **The essential participation of an enzyme in the inhibition of growth of tubercle bacilli by spermine.**—*Ibid.* 327-343.

III. HIRSCH, J. G. (1953). **Spermine oxidase: an amine oxidase with specificity for spermine and spermidine.**—*Ibid.* 345-355. **2678**

I, II & III. Spermine and spermidine inhibited human type tubercle bacilli if a protein of the α-globulin type, acting as an enzyme, was present. The enzyme, which was obtained from some but not all mammalian sera, had an oxidative deaminating action confined to spermine and spermidine as substrates. The optimum pH level was around neutrality. Carbonyl reagents caused complete and certain amines and the cyanide caused partial inhibition.

—R. MARSHALL.

HUNTER, R. B. & TUDHOPE, G. R. (1953). **Mode of action of tromexan.**—*Lancet.* **264**, 821-823. [Authors' summary copied *verbatim.*] **2679**

Evidence is described which supports the view that tromexan [ethyl biscoumacetate] acts on the mechanism of blood coagulation similarly to dicoumarol, and that its action is principally on factor VII.

A comparison of Quick's and Owren's methods of estimating "prothrombin" indicates that Quick's one-stage method is suitable for routine use.

Reference is made to recent views on thromboplastin generation.

WYSS, O., SMITH, G. N., HOBBY, G. L., OGINSKY, E. L. & PRATT, R. (1953). **Symposium on the mode of action of antibiotics.**—*Bact. Rev.* **17**, 17-49. **2680**

In this symposium the modes of action of 5 antibiotics were considered. Under certain circumstances chloromycetin inhibits protein synthesis as well as esterase activity, whilst terramycin and aureomycin also inhibit protein synthesis and may also act on the phosphorylation system. Both these antibiotics stimulate growth even in subinhibitory concentrations so that in this regard their action does not seem to be on the intestinal flora. Streptomycin inhibits the oxidation of pyruvate and oxalacetate and also interferes with the oxidation of fatty acids containing 12 or more carbon atoms by *M. tuberculosis.* The inhibition caused by penicillin appears to be due to excessive dehydrogenation so that the bacteria can no longer absorb nutrients.—J. A. NICHOLSON.

KEEP, J. M. (1952). **Some observations on the use of the newer antibiotics in small animal practice.**—*Aust. vet. J.* **28**, 89-97. **2681**

K. emphasized the value of verifying the causal organism of an infection when using antibiotics.

He described the treatment of a variety of conditions and gave selected case reports. Streptomycin, aureomycin and chloramphenicol proved valuable in urogenital tract infections. Good results were claimed for streptomycin against enteritis associated with *Proteus* sp. in the dog. Streptomycin and aureomycin were of no value in distemper. They did, however, control secondary bacterial infections satisfactorily.

Indications and preferences in the use of streptomycin, aureomycin and chloramphenicol as compared with penicillin, and suggested combinations of antibiotics for use in severe infections were given in two tables.

—K. G. JOHNSTON.

SENECA, H. & IDES, D. (1953). **The effect of magnamycin on protozoa and spermatozoa.**—*Antibiot. & Chemother.* **3**, 117-121. [Spanish summary p. 215.] [Authors' summary modified.] **2682**

Studies *in vitro* indicated that magnamycin [a product of *Streptomyces halstedii*] was inhibitory to cultures of *E. histolytica* at concentrations between 31·25 and 125 μg./ml. *T. cruzi* and *L. donovani* were inhibited at concentrations between 31·25 to 62·5 μg./ml. *T. rhodesiense* was killed in 1% coln. in 4 min. and in 125 μg./ml. in 261 min. *Tr. vaginalis* and *Tr. foetus* were inhibited in 250 μg. per ml. Human spermatozoa were immobilized in 10 mg./ml. in 44 min., in 1 mg./ml. in 95 min.

and in 100 μg. per ml. in 215 min. Solutions at 10 μg./ml. and 1 μg. per ml. had practically no effect.

The authors concluded that magnamycin should be tested in the treatment of amoebiasis, leishmaniasis, and trypanosomiasis.

See also absts. **2456** (antituberculous substance from tuberculous organs); **2457** (antituberculous action of tissue extracts and surface-active agents); **2460** (action of streptomycin on *E. rhusiopathiae*); **2461** (effect of sulphadiazine on *E. rhusiopathiae*); **2464** (sulphaguanidine in fowl cholera); **2466** (antibiotics); **2468** (treatment of mastitis caused by *Bact. coli*); **2487** (blackleg); **2498** (antrycide); **2507-2508** (aureomycin and terramycin in anaplasmosis); **2451** (equine infectious anaemia); **2572** (aureomycin in heartwater); **2575** (antibiotics); **2587-1589, 2591** and **2595** (insecticides); **2598, 2610-2611** and **2614** (anthelmintics); **2622-2628** (antibiotics in animal nutrition); **2674** (pharmacology of acovenoside); **2685** (effect of atebrin on chicks); **2706** (effect of terramycin hydrochloride on bull spermatozoa); **2722** (carbon dioxide anaesthesia in slaughter animals).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

OVEREND, W. G. (1951). **The use of tracer elements in biology.** pp. v + 57. Melbourne: London: Toronto: William Heinemann Ltd. 3s. 6d. **2683**

This useful little book outlines in clear terms the structure of the atom, the conception of isotopes and the making of radio-active isotopes. In five chapters the author discusses the requirements of a tracer, the production, detection and measurement of tracers and their use in biology and medicine.—E. MARSH JONES.

MULLICK, D. N. & KEHAR, N. D. (1952). **Climate and animal health. I. Seasonal variations in the pulse rate, respiration rate, body temperature, body weight and haemoglobin in normal Indian cattle.**—*Indian J. vet. Sci.* 22, 61-68. **2684**

This is the first of a series of articles on climate and animal health, with observations on pulse and respiration rates, body temp., body wt. and Hb., made at monthly intervals on 6 steers. Records were kept of mean ambient temp. and relative humidity.

Changes in air temp. appeared to be the major cause of variations in the physiological phenomena under observation. Higher values for pulse and respiration rates, and body temp., and lower values for body wt. and Hb. were recorded with rise in air temp. The change in respiration rate was most conspicuous.

Relative humidity above 80% seemed to play a part in causing the variations.

Analysis of variance, partial correlation coefficient and multiple regression equations were used for statistical analysis of the data. It appeared that the respiration rate could be used to estimate the tolerance of animals to heat.

—A.S.

DOUGLASS, C. D., DAY, P. L., KELLEY, B. & MESCHAN, I. (1953). **The influence of X-irradiation and atabrine upon feathering in the chick.**—*Science.* 117, 274. **2685**

The authors observed that the feeding of atebrin to chicks appeared to overcome the inhibition of feathering produced by X-irradiation.—F. T. W. JORDAN.

BLAXTER, K. L. & ROOK, J. A. F. (1953) **Indirect determination of water retention in cattle as a means of estimating energy exchange.** [Correspondence.]—*Nature, Lond.* 171, 609-610. **2686**

A method which permits the accurate estimation of water retention from the retention of sodium and potassium was described. Since a gain in weight is due to protein, ash, fat and water, and as the first two can readily be determined by the balance method, knowing the water retention allowed the fat retention to be determined without recourse to respiration chamber technique.—J. A. NICHOLSON.

MENDELSON, J. A., RUDY, R. L. & CURTIS, G. M. (1953). **A method for the determination of the effect of hypothyroidism on gastric motility in the dog.**—*J. Lab. clin. Med.* **41,** 659-662. [Abst. from authors' summary.] **2687**

The authors described methods for the determination of the effect of hypothyroidism on gastric motility in the dog.

WIŚNIEWSKI, T. (1952). Wpływ zmian czynnościowych tarczycy na wartość użytkową zwierząt domowych. **[A review of the influence of the functional changes in the thyroid gland on the economic value of domestic animals.]**—*Méd. vét., Varsovie.* 8, 304-307. **2688**

A review of the literature on the subject, including the use of thyroxine.

—J. R. MITCHELL.

LEECH, F. B. & BAILEY, G. L. (1953). **The effect on the health of lactating cows of treatment with galactopoietic doses of thyroxine or iodinated casein.**—*J. agric. Sci.* 43, 236-251. [Authors' summary modified.] **2689**

The effect on cow health of galactopoietic stimulation with thyroactive materials was determined from a statistical study of the results of a large field experiment involving 2000 cows over a 3-year period.

The same experimental procedure was followed on 37 farms scattered over England, Scot-

land and Wales. Half the cows in each herd received a course of treatment with iodinated casein or thyroxine, and the other half constituted a suitable set of controls. Cows that remained in the herds received second and third treatments in successive lactations.

The galactopoietic stimulation was started at a fixed interval after calving, irrespective of the season of the year. The use of the thyroactive materials in successive lactations did not have any serious adverse effects on the health of cows. The effect on productivity was less than had been expected, since the increase in milk yield resulting during the period of hormonal treatment was often largely or completely negatived by a shortening of the lactation period.

The incidence of disease was somewhat greater in the treated than the control group, the principal contribution to this difference being from the diseases described as digestive disorders. The rate of disposal of treated and control groups was almost identical. There were no adverse effects on the reproductive life of treated cows.

During the period of treatment, there was a marked response in daily milk yield, but the fat content of the milk was not raised.

l-Thyroxine sodium replaced iodinated casein on 26 farms during the second and third years. There was no significant difference in the milk-yield responses resulting from the two drugs. Cows readily ate cubed feeding stuffs containing thyroxine, but frequently did not relish similar cubes fortified with iodinated casein.

MORTON, R. K. (1953). **Microsomal particles of normal cow's milk.**—*Nature, Lond.* **171,** 734-735. **2690**

Lipoprotein particles obtained by centrifuging buttermilk (14,000 gravity, 45 min.) were associated with high alkaline phosphatase and xanthine oxidase activities, but not with succinic dehydrogenase or cytochrome oxidase activities. They appeared to be identical with the microsomes (believed to be mitochondrial fragments) of the mammary gland. Their discovery necessitates reconsideration of some of the evidence for the virus transmission of carcinoma.

—N. DEAN.

WHITTLESTONE, W. G. (1952). **The distribution of fat-globule size in sow's milk. I. The effect of sampling at intervals throughout milking.**—*J. Dairy Res.* **19,** 127-132. **2691**

Using an improved method of measurement W. found that in sow's milk the fat globules varied from 0·5–7 μ in size. The same variation of size was found at all stages of milking. Unlike cow's milk, the strippings were no richer in fat than earlier milk.—JOHN SEAMER.

MURTY, V. N. & KEHAR, N. D. (1951). **Physiological studies on the blood of domestic animals. II. Goats.**—*Indian J. Physiol. Allied Sci.* **5,** 71-78. **2692**

An account of the morphological, organic and inorganic constituents of the blood of healthy goats 9–30 months old. The red cell count was lower and the serum sodium and chloride values were higher than in cattle and buffaloes.—D. N. MULLICK.

CORT, J. H. & MCCANCE, R. A. (1953). **The neural control of shivering in the pig.**—*J. Physiol.* **120,** 115-121. [Authors' summary slightly modified.] **2693**

Shivering was initiated in lightly anaesthetized piglets with normal or subnormal temperatures by the introduction of cold air directly into the trachea. The first inspiration of cold air produced a short burst of shivering followed by a pause during the expiratory rest. If the stimulus continued for some time the shivering increased in amplitude and lost its respiratory rhythm. The admission of warmed air into the trachea did not abolish the generalized shivering which lasted until the body temperature had been raised. Cutting the vagus bilaterally obliterated the rhythmic response.

PARRY, H. B., TANSLEY, K. & THOMSON, L. C. (1953). **The electroretinogram of the dog.**—*J. Physiol.* **120,** 28-40. [Authors' summary modified.] **2694**

The electroretinogram was measured in Red Irish Setters and some other dogs. A negative potential following the *b*-wave was investigated and its behaviour with respect to intensity of stimulus and time of dark adaptation determined. This potential appeared to be retinal in origin because it was still obtainable after intra-cranial section of the optic nerve. The whole electroretinogram in dogs, as recorded in these experiments, was associated with the rod system of receptors. Electroretinography provides a useful method of early diagnosis of progressive retinal atrophy.

VENZKE, W. G. (1952). **Morphogenesis of the thymus of chicken embryos.**—*Amer. J. vet. Res.* **13,** 395-404. **2695**

An account of the morphogenesis of the thymus gland of chick embryos studied by histological examination of the cervico-thoracic region of a series of embryos from 4 days old to hatching.—F. T. W. JORDAN.

See also absts. **2737** (book, anatomy); **2739** (book, histochemistry).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

FÉGHALI, A. (1952). Enquête et recherches récentes sur l'intoxication par le fromage dans le Proche et Moyen-Orient. **[Poisoning by cheese in the near and middle East.]**—*Pr. méd.* **60**, 487. **2696**

A general note. Cases reported were mostly due to contamination of cheese with metallic salts derived from the utensils used in the course of processing or to staphylococcal infection.

—R. MARSHALL.

EMMENS, C. W. (1953). **Sheep Biology Laboratory, Prospect, New South Wales.**—*Nature, Lond.* **171**, 597-598. **2697**

This laboratory is designed to improve the productivity, including fertility, of healthy sheep. It will not be greatly concerned with study of diseases of sheep.—G. B. S. HEATH.

See also absts. **2587** (insecticides); **2728** (report, Great Britain); **2740** (book, public health).

LIVESTOCK HYGIENE

DE VAJDA, A. (1952). **Some aspects of surface water development in arid regions.**—*F.A.O. Development Paper, Agriculture.* No. 21. pp. 45. **2698**

The author described various methods of utilization of surface water for animal and human use: these include springs, streams, run-off retardation, catchment, flood diversion, and storage systems.—S. E. FOX.

MICHAEL, D. T. (1953). **Hill reclamation: aspects of management in relation to metabolic disorders of sheep.**—*Vet. Rec.* **65**, 379-381. [Author's summary copied *verbatim.*] **2699**

Some care in flock management is suggested when intake pastures are improved, so that sudden change of diet is avoided at lambing time. Throughout pregnancy some form of rotational grazing is recommended. Where necessary conditions for metabolic disorders are present, there is some indication that inclement periods and exposure, or lack of shelter, tend to precipitate further cases.

BONSMA, J. C. & LE ROUX, J. D. (1953). **Influence of environment on the grazing habits of cattle.**—*Fmg. S. Afr.* **28**, 43-46. **2700**

Observations of Africander and Africander × Hereford cattle in the Northern Transvaal bushveld showed that the same few cows took the initiative in leading the groups to the water point or back to the veld, but not the bulls. During 24 hours, 8⅓ hours were spent grazing, 6½ ruminating and 5¾ resting. The distance the animals had to walk to water was normally 2⅓ miles, but under drought conditions this might be 16 miles or more per day. It was concluded that grazing control and a proper water supply are essential for S. African conditions.

—J. A. NICHOLSON.

See also absts. **2472** (influence of litter on salmonellosis in chicks); **2586** (built-up litter and parasites).

REPRODUCTION AND REPRODUCTIVE DISORDERS

I. BEATTIE, H. E. R. (1952). **The place of artificial insemination in herd improvement in Australia.**—*Aust. vet. J.* **28**, 255-258. **2701**

II. WISHART, D. S. (1952). **The place of artificial insemination in herd improvement in Australia.**—*Ibid.* 259-262. Discussion pp. 262-264. **2702**

I. B. emphasized that improvements in nutrition are, at present, more important than changes in breeding methods. Difficulties in the use of A.I. in Australia are associated with long distances, the small size of many herds, and the scarcity of proven sires.

II. A.I. has limited application to commercial herds in Australia. Because of the small numbers of proven sires, the max. benefit cannot be gained. Limiting economic factors are the high cost of establishing and operating an A.I. centre.

At the present time better feeding of dairy cattle is more important than A.I. In the future, stud herds might be used as breeding nuclei, indirectly spreading the genetic merit of proven sires through their sons.

—A. W. BLACKSHAW.

BARTLETT, D. E., MOIST, K. & SPURRELL, F. A. (1953). **The *Trichomonas foetus*-infected bull in artificial insemination.**—*J. Amer. vet. med. Ass.* **122**, 366-370. **2703**

Of 168 bulls examined 23 were infected. It was concluded that 6 negative preputial samples taken at weekly intervals should be considered

as a minimal diagnostic routine. Sampling methods were compared.—S. F. M. DAVIES.

HUSTON, K. A., ARNOLD, K. J., HEIZER, E. E. & BAYLEY, N. D. (1953). **A systematic procedure for estimating bull fertility from non-return data.**—*J. Dairy Sci.* **36**, 260-267. [Authors' summary modified] **2704**

The authors used Wald's method of sequential analysis in evaluating levels of bull fertility from non-return data. The test is relatively simple, utilizing grouped data as they are collected in the field, and is probably the most efficient test available.

The results of the work indicated that non-return information from bulls is subject to considerable variation, which leads to a larger number of errors in decisions than would normally be expected from such specific sequential plans as were used.

Non-return data from 512 bulls were submitted to one of 3 different sequential plans. Acceptance or rejection decisions were made on each of these bulls. Non-return data for the calendar year after the completion of the test indicated that over 89% of these decisions were correct.

MIES FILHO, A. & GRAÇA, V. DE P. (1950). Observações sôbre a influëncia das estaçoes do ano na espermatagênese de reprodutores bovinos importados. [**Seasonal influences on spermatogenesis in imported bulls in Brazil.**] —*Inst. Zootec. Minist. Agric., Rio de Janeiro.* Publ. No. 9. pp. 12. **2705**

Four Friesian bulls, imported from Holland to Brazil in Nov. 1948, were studied over the course of a year. On arrival they were immunized against F. & M. disease, blackleg and anthrax. Collections began on the 21st Dec. and were continued at the rate of one or two weekly. A very simple classification of semen quality based on density and motility was used, and the methylene blue reductase test was routinely performed. Eighty summer, 58 autumn, 88 winter, and 73 spring ejacula were examined. Methylene blue test results and motility observations were found to correspond closely. Mean vol. and motility were lowest in summer and highest in winter, the former ranging from 3·2 to 4·0 ml. and the latter to a roughly comparable extent. In discussion on the paper Lagerlof's experiments on overheating of the scrotum were quoted at length. The heat of the climate is thought to be the main factor involved; this may act directly and/or by inducing thyroid hypofunction.

—F. L. M. DAWSON.

STALLCUP, O. T. & MCCARTNEY, H. K. (1953). **Toxicity to bull spermatozoa of terramycin hydrochloride and its use as an antibacterial agent in diluents.**—*J. Dairy Sci.* **36**, 293-295. **2706**

The authors investigated the effect of terramycin hydrochloride on the motility of bovine spermatozoa and on bacterial growth in bovine semen diluted with citrate-buffered egg yolk and stored at 5°C. It was found that 20 mg. of terramycin hydrochloride could be added per 100 ml. of diluted semen without spermicidal effects. This level of the antibiotic was either bacteriostatic or bactericidal and sometimes both. On the basis of their results, the authors recommended the use of the antibiotic in diluted semen, provided that the specified concentration was not exceeded.—A.S.

VANTIENHOVEN, A., SALISBURY, G. W., VANDEMARK, N. L. & HANSEN, R. G. (1952). **The preferential utilization by bull spermatozoa of glucose as compared to fructose.**—*J. Dairy Sci.* **35**, 637-641. **2707**

The authors showed that the depressed fructolysis rate in diluted bull semen is due to preference of the spermatozoa for the glucose in the egg yolk.—IAN NEWSAM.

LUTWAK-MANN, C. & ROWSON, L. E. A. (1953). **The chemical composition of the pre-sperm fraction of bull ejaculate obtained by electrical stimulation.**—*J. agric. Sci.* **43**, 131-135. [Authors' summary modified.] **2708**

Semen was collected from bulls by means of the electro-ejaculation method developed by Thibault *et al.* [*V.B.* **19**, 3062].

A sperm-free fraction of the ejaculate, produced in the early phase of stimulation, was chemically examined. It was found to have a low protein content, but its chloride concentration was higher than that of the sperm-containing fractions of the ejaculate. Fructose and citric acid occurred in very low concentrations, and 5-nucleotidase was absent. This indicates clearly that the secretion does not originate either in the seminal vesicles or in the ampullar glands, but probably in the urethral glands.

The pre-sperm ejaculate fraction had no effect on bull sperm fructolysis and motility,

The chemical composition of the pre-sperm secretion makes it unlikely that it could play a role in the nutrition of the spermatozoa; presumably, its chief function is the clearing of the urethral passage prior to the descent of the semen proper.

SWANSON, E. W. & BOATMAN, J. P. (1953). **The effect of thiouracil feeding upon the seminal characteristics of dairy bulls.**—*J. Dairy Sci.* **36**, 246-252. 2709

An account of an experiment in which hypothroidism was induced in two young bulls and one old bull by feeding thiouracil. Physical symptoms of thyroid deficiency were produced in all 3 animals. Changes in seminal characteristics were observed only in the aged bull, in which an increase in abnormal and dead spermatozoa, as well as a reduction in motility, viability, and concentration occurred. Natural recovery followed about 6 weeks after thiouracil was withdrawn. It was shown that thiouracil had no harmful effect upon normal ejaculated semen and that thyroxine did not stimulate the motility or improve the viability of spermatozoa from the hypothyroid bulls.—A.S.

SANADA, Y. *et al.* (1952). **[Changes in pH of the vaginal mucus of the mare in estrus.]**—*J. Jap. vet. med. Ass.* **5**, 14-15. [In Japanese.] 2710

The pH of vaginal mucus of mares in oestrus varied from 6·6 to 7·2. It varied in the presence of urine and bacteria. The pH paper test of the mucus was used for the diagnosis of oestrus and the detection of metritis.

—KOGI SAITO.

HADEK, R. (1953). **Alteration of pH in the sheep's oviduct.** [Correspondence.] —*Nature, Lond.* **171**, 976. 2711

The pH of sheep oviducts rose at oestrus from about 6·5 to 7. If the oviducts were examined as long as 2 hours after death, pH in all specimens fell to 6·2.—G. B. S. HEATH.

SIMUNIĆ, B. (1952). Utjecaj količine estrusne sluzi na koncepciju kod krava. **[The influence of oestral mucus on conception in cows.]** —*Vet. Archiv.* **22**, 60-65. [French and German summaries. Abst. from French summary.] 2712

Observations were made on 462 cows which were divided into 5 groups according to the quantity of secretion observed at oestrus. Conception figures were highest in the 3rd and 4th groups.—G. V. LAUGIER.

PÉREZ Y PÉREZ, F. (1951). Nuevas aportaciones al diagnóstico biológico de la gestación en la vaca. **[Tests for diagnosis of pregnancy in the cow.]**—*An. Fac. Vet., Madrid.* **3**, 29-43. [English, French and German summaries.] 2713

After a summary of previous work, the author recommended Babudieri's test of injecting concentrated urine into young g. pigs 2–8 days old; the presence of Foa-Kurloff granules in 3% or more of the large lymphocytes 2–6 days after injection is considered positive. These granules occur normally in adult g. pigs but are missing in the new-born. The test is 50% accurate before the 5th month of pregnancy and 100% thereafter. Non-pregnant cows give negative results in all stages of their cycle, but nymphomaniacs with cystic ovaries give a faint reaction.—R. MACGREGOR.

DRAČA, P. & MARKOVIĆ, B. (1952). **[Pregnancy diagnosis in cows using a skin-reflex test.]**—*Acta Vet., Belgrade.* **2**, No. 2. pp. 81-90. [In Serbian. French summary.] 2714

The skin-reflex test described by Gavriljak [*V.B.* **22**, 1879] consists in the application of a slight manual pressure on the space between the 9th and the 12th dorsal vertebrae. However according to the authors this method is inferior to rectal exploration. Moreover, its accuracy is reduced by the circumstance that tuberculous non-pregnant cows also give a positive reaction.—I. MARTINI.

BLACK, W. G., ULBERG, L. C., CHRISTIAN, R. E. & CASIDA, L. E. (1953). **Ovulation and fertilization in the hormone-stimulated calf.** —*J. Dairy Sci.* **36**, 274-280. 2715

Thirty-two veal calves between 90 and 180 lb. and of unknown age, were given a series of s/c inj. of gonadotrophic sheep pituitary extracts to stimulate follicle production, and were artificially inseminated following the i/v inj. of luteinizing extract. Moderate to extreme follicular stimulation was induced in all except one animal, but corpora lutea were formed in only 16 of the calves. Thirty-five ova were recovered from 10 animals, but only 7 of them, from 2 animals, showed evidence of fertilization.—A.S.

CONNOR, N. D. (1951). **Observations on some of the effects of estrogens on the canine female.**—*Proc. 88th Ann. Meet. Amer. vet. med. Ass.* Milwaukee. Aug. 20-23, 1951. pp. 98-101. 2716

Mongrel bitches were treated with various oestrogens for differing periods, after unilateral ovariohysterectomy. Results were variable, but notable findings included:—(a) the most patent oestrogen was di-ovocylin; (b) oestrogens accelerated endometrial regeneration, and relaxed the cervix when closed; (c) most marked toxic reactions were seen in the blood picture; (d) oestrogens occasionally inhibited hair-growth.—B. G. CLARKE.

TURPIN, R., JÉROME, H. & SCHMITT-JUBEAU, H. (1952). Action de doses progressives de diéthylstilboestrol sur la cuprémie chez le rat. **[Action of stilboestrol injections on cupraemia in rats.]**—*C. R. Soc. biol. Paris.* **146,** 1703-1706. 2717

A cupraemia was produced in rats by injections of stilboestrol which were within a range just above the oestrogenic level. Some relation was indicated with thyroid activity.

—R. MARSHALL.

CHANG, M. C. & PINCUS, G. (1953). **Does phosphorylated hesperidin affect fertility?** — *Science.* **117,** 274-276. 2718

Inconclusive evidence was presented regarding the value of a potent hyaluronidase inhibitor — phosphorylated hesperidin — as an antifertilization drug.—IAN NEWSAM.

DONALD, H. P. & HANCOCK, J. L. (1953). **Evidence of gene-controlled sterility in bulls.** —*J. agric. Sci.* **43,** 178-181. [Authors' summary modified.] 2719

A study was made of the relationships of sterile Friesian bulls manifesting 'knobbed' spermatozoa. The conclusion drawn was that the characteristic defect of the acrosome was due to an autosomal sex-limited recessive gene.

LAMPKIN, G. O. (1953). **Intolerance of dizygotic twin lambs to skin homografts.** [Correspondence.] — *Nature, Lond.* **171,** 975-976. 2720

It is unlikely that homografts between dizygous twins in sheep will survive transplantation. Skin interchange could be used as a highly critical test for monozygotic twinning in sheep.

—G. B. S. HEATH.

LIENHART, R. (1952). Rapports numériques des sexes à la naissance chez quelques mammifères domestiques. **[The sex ratio in some domestic animals.]**—*C.R. Soc. Biol., Paris.* **146,** 1964-1967. 2721

Using figures for sex ratios collected from the literature, in horses, cattle, sheep and pigs, it was shown that males tended to predominate, especially in the pure breeds. It was argued that lethal factors on the x chromosome may have accounted for this, and for the sex ratios nearing equality among hybrids.

—B. G. CLARKE.

See also absts. **2479** (epididymitis in rams); **2643** (maternal vitamin A deficiency and malformations in young); **2682** (effect of magnamycin on spermatozoa); **2741** (book, fertility and artificial insemination in cattle).

ZOOTECHNY

ANTHONY, D. J. (1953). **Humane slaughter by aid of carbon dioxide anaesthesia.**—*Brit. Vet. J.* **109,** 110-113. 2722

In an abattoir in the U.S.A., a long downward sloping tunnel, with a conveyor belt-type of bottom, is employed as an anaesthetizing chamber prior to the mass slaughter of pigs for bacon, about 50 sec. inhalation of 60% CO_2 providing 10–20 sec. of complete immobility and insensitivity outside the tunnel. The method is cheap, harmless to the meat product, rapid (up to 1,000 pigs can be dealt with per hour) and shackling and sticking are possible in about half the period of immobility provided.

—B. G. CLARKE.

See also abst. **2742** (book, dog breeds).

TECHNIQUE AND APPARATUS

STERNE, M. (1952). **A note on the staining of bacterial capsules.**—*Onderstepoort J. vet. Res.* **25,** No. 4. pp. 51-52. 2723

S. found that the efficiency of Muir's capsule stain was increased by adding a surface-active agent (CTAB) to the primary carbolfuchsin stain, and by using 0·1% alkaline methylene blue as a counter stain. Heating of the stain was unnecessary.—A.S.

BAUD, C. A. (1952). La fixation "par substitution". **[A new method of fixation of tissues.]**—*Bull. Micr. appl.* **2,** 158-160. 2724

B. described a technique for tissue fixation which avoids the distorting effects normally associated with slow diffusion.

Material is quickly brought to a temp. of approx. −150°C. so that the water of the tissues freezes amorphously without forming crystals which might damage the structure of the cells.

The frozen material is then transferred to the fixative and allowed to return slowly to room temp.

The method ensures that each cell is fixed as soon as its contained water melts, so that the usual artefacts of fixation, which are caused by

the differential rates of diffusion of the various constituents of the fixative through tissues undergoing autolytic alteration, are altogether avoided.—A.S.

GORET, P., JOUBERT, L. & BEAUREAU, P. (1953). L'hémosédimètre angulaire à abaque. Présentation d'un appareil pour la mesure de la vitesse de sédimentation globulaire. **[The blood sedimentation test; apparatus used for the test.]**—*Rev. Méd. vét.* **104,** 65-74. **2725**

An account of a rack in which the tubes (0·7 x 16 cm.) of blood and anticoagulant are placed at an angle of 45°. A scale attached to the rack enables direct readings of the percentage of sediment to be made, regardless of the volume of blood in the tube.—R.M.

SEGHETTI, L. & MARSH, H. (1953). **Liver biopsy in cattle.**—*Amer. J. vet. Res.* **14,** 9-11. **2726**

A 21·5 × 0·6 cm. trocar containing a sharp cannula is inserted under local anaesthesia through a skin incision between the 11th and 12th ribs in a Hereford yearling 21 cm. below the dorsum of the corresponding vertebra, and suction is applied with a syringe while cutting a 6 cm. core of liver tissue. No haemorrhage occurs except a clot which fills the liver wound.—J. E. SMITH.

See also absts. **2445** (enrichment medium for mastitis organisms); **2446** (CAMP test for differentiation of *Str. agalactiae*); **2463** (isolation of *E. monocytogenes*); **2474** (enrichment media for *Salmonella*); **2558** (cultivation of dog distemper and hepatitis viruses); **2713-2714** (pregnancy diagnosis).

MISCELLANEOUS

BRUES, A. M. & PATT, H. M. (1953). **Mechanisms of protection against mammalian radiation injury.**—*Physiol. Rev.* **33,** 85-89. [Authors' summary modified.] **2727**

Protection of mammals against radiation sequelae is complicated by the physiological complexity of the animal body. Thus the physico-chemical complexities of energy adsorption and the many ramifications of function in the body seeking to retain physiological balance must be allowed for.

By proper control of protection experiments, and in particular by examination of the end effects in their entirety, including chronic and late as well as early changes, it may be hoped that experiment work in this field will serve not only a useful purpose, but add greatly to basic knowledge in many fields in physiology, pathology, and radio-biology.

REPORTS

GREAT BRITAIN. (1952). **Report of the Ministry of Health covering the period from 1st April, 1950 to 31st December, 1951. Part II. On the state of the public health, being the annual report of the Chief Medical Officer for the year 1950.** [CHARLES, J.] pp. 192. London: H.M. Stat. Off. 6s. **2728**

The greater part of this report is mainly of medical interest.

The death rate of children of school age from TB. has fallen by 90% since 1907 and deaths from TB., other than respiratory forms, fell from 3,383 in 1946 to 1,890 in 1950.

Forty eight per cent, of all proved food poisoning was due to processed or made-up meat. Ducks' eggs were associated with 45 outbreaks of SALMONELLOSIS and hens' and dried eggs to three. Milk was mentioned in 16 outbreaks, some due to dried or canned milk and three to T.T. unpasteurised milk.

Many laboratories reported CYSTICERCUS INFESTATION in cattle carcasses from local abattoirs. The average infection figure for the whole of England was about 0·25%.

Tests were carried out to find a methylene blue test equally applicable to raw and pasteurized milk.—D. S. RABAGLIATI.

U.S.A. (1952). **Report of the Los Angeles County Livestock Department 1951-1952.** [WICKTOR, C. E.] pp. 56. [Mimeographed.] **2729**

Dairy cattle numbered over 125,000. During the year, 61,162 dairy cattle were imported into the country, and of these 0·351% reacted to the tuberculin test. 136,717 tests were made including retests, 0·272% animals reacted.

A herd of 34 pigs was affected with BOTULISM, and all died within three days, except a few piglets. The symptoms were subnormal temperature, and incoordination.

LUNGWORM INFESTATION caused severe losses among several thousand Brahman and Hereford calves imported from Texas. In three batches totalling 1000 head, some 200 died.

PULMONARY EMPHYSEMA occurred among cattle soon after grazing on an irrigated pasture where there was a lush growth of vegetation. P.M., there was acute lobar pneumonia and no specific organism was isolated. Experimentally, cattle under identical conditions developed acute emphysema thought to be of an allergic nature.

Excessive amounts of growth-promoting antibiotics over a long period were suspected to have caused losses in a group of pigs.

—J. A. GRIFFITHS.

U.S.A. (1952). **Report of the Nevada State Department of Agriculture for the fiscal years ending June 30, 1951-1952.** pp. 29. Carson City, Nevada: State Printing Office. [Report of Division of Animal Industry pp. 7-17.] 2730

The State has remained free from TUBERCULOSIS. Calfhood vaccination against BRUCELLOUSIS was under official supervision in 1,001 herds and all the 21,066 calves were vaccinated, tattooed and branded. Ninety dairy herds were under the Test and Slaughter Plan and 19 dairy herds were accredited free from the disease.

A total of 4,144 pigs were given SWINE FEVER serum-virus inoculation.

—J. A. GRIFFITHS.

U.S.A. (1952). **Science in agriculture. Report 62, 1951-52, of the Wyoming Agricultural Experiment Station.** [BRIGGS, H. M.] pp. 21. Laramie: Wyoming Agriculture Experiment Station. 2731

SELENIUM POISONING was investigated. Feeding protein and vitamin A decreased its effects. If the intake of selenium was decreased or stopped the affected animals soon recovered as the selenium absorbed was eliminated within about 30 days.

CALCULI OF THE URINARY TRACT in cattle affected as many as 6% of some Wyoming herds. It is estimated 2% of all herds were affected. In most cases surgical attention was necessary. Treatment with a protein free nitrogenous extract of the pancreas (depropanex), given i/m, produced good results experimentally.—J. A. GRIFFITHS.

U.S.A. (1951). **The Rockefeller Foundation. Annual report 1951.** pp. 557. New York: Rockefeller Foundation. 2732

A study of the genetic aspects of behaviour has been in progress in the past 6 years at Bar Harbor, Maine. Different strains of dogs exhibited differences in speed of learning, in presence and intensity of emotional reactions to specific stimuli and in degree of dependance on other dogs. The effect of environment was not uniform. Cross breeding was carried out to find the hereditary mechanisms involved in the behaviour of various strains of dogs, with a view to applying the results in studies on human behaviour.

Dogs were also being used at McGill University in the study of neurological events underlying the phenomena of learning perception, memory and emotional expression.

At Harvard University a research programme was in progress to work out on dogs the basic means by which the nervous system elaborates durable patterns of response to environmental changes.

Research was being carried on to study the new virus material obtained in East and West Africa, Brazil and Colombia [see *V.B.* **22**, 3696-3698 & **23**, 540]. It was only possible to see images of these viruses with the electron microscope, which revealed a wide range of sizes, and the ultra centrifuge showed that there was also great difference in weight. Six of the viruses appeared to have kinship with known causes of disease in man and in animals.

—J. A. GRIFFITHS.

U.S.A. (1950). **New York State Department of Health. Annual report of the Division of Laboratories and Research.** pp. 132. Albany: 2733

The Report covered the wide field of the work of the Division. Items of veterinary interest included:—the regression noted in sarcoma in mice when repeatedly injected with a heat-killed saline suspension of *Salmonella* Type C—80% of 7-day implants in mice regressed and disappeared with this treatment; methods being developed for the study of the Coxsackie group of viruses; study of the protein fractions of tuberculin; an account of an epidemic of *S. newport* infection in the mice and g. pigs of the laboratory; ZINC POISONING in ferrets as a result of galvanized zinc cages having become corroded; a method suitable for use in the field for removal of specimens of brain tissue from cattle carcasses for the diagnosis of RABIES and many other of less direct veterinary interest.—J. A. GRIFFITHS.

BOOK REVIEWS

ANON. (1952). **Microbial growth and its inhibition. First international symposium of chemical microbiology. World Health Organization Monograph Series. No. 10.** pp. 285. Geneva: World Health Organization. $3.00. Fr. 960. Sw. fr. 12. 15s. 2734

This report contains 18 papers presented in Rome, 1951, to discuss microbial physiology and antibiotic chemistry and the various aspects of antibiotic activity. The following are included:—Reaction patterns in bacterial metabolism—C. N. Hinshelwood; Vitamin-B-group substances, especially folic acid and B_{12}, in the metabolism of micro-organisms—D. D. Woods; Studies on aeration-I—E. B. Chain, S. Paladino, D. S. Callow, F. Ugolini & J. van der Sluis; Antibiotics as animal-growth stimulants—E. M. Weber, H. G. Luther & W. M. Reynolds; and a paper given in French by R. Robinson, Relations structurales des substances naturelles.—E. MARSH JONES.

REINHARDT, R. (1952). Die Krankheiten der Katze. Mit Ausführungen über Abstammung, Rassen, Züchtung, Haltung und Richten. **[Diseases of the cat.]** pp. 192. Hanover: M. & H. Schaper. 2nd Edit. DM. 16. 2735

The first third of this book is devoted to a description of breeds, habits, feeding, handling and economic importance, and the remainder to a discussion of the diseases found in cats. These are arranged according to the body systems and constitute a concise and comprehensive account of all cat illnesses.

The illustrations are mainly line drawings and are of good quality, particularly in the part dealing with parasitic diseases; some photographs, however, are poor.

This is a suitable reference book for practitioners and would serve as a valuable student handbook.—E. J. L. SOULSBY.

HAMBURGER, J. & MATHÉ, G. (1952). Physiologie normale et pathologique du métabolisme de l'eau. Déshydratations, oedémes, déséquilibres hydriques. **[Water metabolism. Dehydration, oedema, and water imbalance.]** pp. 502. Paris: Éditions Médicales Flammarion. 2736

This comprehensive study with a bibliography of 2,536 references is divided into three parts. Part I deals with Normal Physiology in four sections covering (a) the physicochemical structure of extracellular and cellular fluids; (b) the exchange of water between the inside and the outside of the cell—and between plasma and interstitial liquids; (c) the balance of water in the organism, intake and elimination; and (d) the neuro-hormonal regulation of the metabolism of water. Part II in three sections is devoted to a discussion of methods of measurement and of calculation. Part III, Pathology, comprises three sections dealing with (a) oedema and dehydration of the extracellular fluid; (b) cellular dehydration and hyperhydration and (c) a general discussion of syndromes of water imbalance within the organism. There is a good index. The book is strongly bound and the clearly printed text is illustrated with photographs, tables and diagrams.—E. MARSH JONES.

GROSSMAN, J. D. [Professor of Veterinary Anatomy, College of Veterinary Medicine, Ohio State University.] [Revised by.] (1953). **Sisson's anatomy of the domestic animals.** pp. 972. Philadelphia & London. W. B. Saunders Company. 4th Revised Edit. 75s. 2737

The preface states that "the familiar landmarks of The Anatomy of the Domestic Animals by Dr. Septimus Sisson known to generations of Veterinary students and Veterinarians have not been changed in this edition", and this in a sentence sums up the case. Twelve illustrations, mainly diagrams, have been added, and the arrangement of the Osteology section has been altered in that more of the general features are included under the heading of the skeleton of the horse. The remainder is the same as in the Third Edition. The terminology adopted is that published by the American Veterinary Medical Association.

—C. W. OTTAWAY.

WILLIAMS, R. T. [Organized and edited by.] (1952). **Biochemical Society symposia No. 8. Metabolism and function in nervous tissue.** pp. 102. Cambridge: The University Press. 12s. 6d. 2738

This monograph is composed of the seven papers presented at a symposium held to consider the biochemistry of the brain. The subject discussed ranged from carbohydrate metabolism in nervous tissue to the use of isotopes in the study of the metabolism of nervous tissue. It is clear that biochemical changes are associated with different stages of cerebral activity and that although the brain normally functions as a whole, it contains many component systems with specialized physiological roles.—J. A. NICHOLSON.

GOMORI, G., (1952). **Microscopic histochemistry: principles and practice.** pp. vi+273. Chicago: The University of Chicago Press. $6.00. £2 5s. 2739

In the introduction the author correctly remarks that there is every indication that histochemistry is now emerging as an independent discipline with its own theoretical backgrounds, methods, and special problems, just as was the case with biochemistry shortly after the turn of the century. Good books on this subject are rare, although several have recently been produced. Dr. Gomori is one of the leaders of modern histochemistry and is to be congratulated on producing a readable introduction to the subject, as well as a useful reference book for the laboratory bench. Veterinary workers will welcome this book.

Some of the techniques described in the enzymes section appear to be based on a misguided confidence in the stability of certain enzyme systems. To be fair, however, Dr. Gomori has introduced this section with a general remark on the uncertain theoretical basis on which some of these staining methods are founded. A most commendable part of the book is the wealth of literature references; they are up to date and international in scope, a feature often lacking in American publications.

There are one of two misprints, and the price ($6.00) would appear to justify a better binding. Apart from these defects the publishers have done a good job in the layout and style of presentation.—D. S. PAPWORTH.

SHEPARD, W. P. (1952). **Essentials of public health.** pp. xxiii+581. Philadelphia, London & Montreal: J. B. Lippincott Company. 2nd Edit. 55s. 2740

This book is written especially for American Public Health workers. The authors, for there are really four authors of this work, state that it is written simply and clearly for quick reading and rapid comprehension, with appropriate references for those who wish for more detailed information on a specific subject. This object has certainly been achieved. The book covers a wide field of public health and discusses under each heading the responsibility of the Medical Officer of Health, the practising physician and last but not least the general public and the individual.

Although well written and extremely interesting, there is comparatively little of purely veterinary interest, but one cannot help having the feeling that apart from the chapter on tuberculosis, too little reference has been made to the work of the veterinary profession.

Federal standards on meat inspection are usually adopted by the State and local authority, which work is carried out by veterinarians. We can, however, hardly agree with the statement on page 118 that:—"Meat undergoes careful supervision from its live-state till it is purchased by the consumer. This inspection is more important esthetically and economically than in safeguarding healthy." Again, is it not stretching the facts too far to say on page 119:—"Trichinosis (the most important disease, but one in which meat inspection, except for rodent control, and control of the meat products is ineffective, the infested meat being undetachable)"? Nor, can we concur in the suggestion on page 123, dealing with milk, that the rich flavour of raw milk is only due to the presence of odours from the cowshed and particles of manure which are absent from pasteurized milk.

The lack of credit given to the veterinary profession does not, however, apply to its work on tuberculosis, for the authors are loud in their praise of the veterinarians' work in its eradication from the cattle of the country.

There is no doubt that the book will serve a most useful purpose to all interested in general public health, not only in the U.S.A. but also in Great Britain and elsewhere.

—D. S. RABAGLIATI.

MILLAR, P. G. [Sterility Advisory Officer, Ministry of Agriculture and Fisheries, Weybridge.] & RAS, N. P. [Chief Lecturer in Large Animals Clinic, Veterinary Faculty of Buenos Aires.] (1952). **Manual of infertility and artificial insemination in cattle.** pp. xv+339. London: Baillière, Tindall & Cox. 25s. 2741

Not many books devoted entirely to this subject have been published either in Europe or America. This is probably the most adequate that has appeared to date, within the limitation that it has been written admittedly in the light of the author's own personal experience, and has no bibiliography. There are only a few references to the observations of other workers, mostly not in the same but in related fields. The book is intended not only for veterinary surgeons in general practice but for farmers and agricultural students.

Despite the title, the work begins to deal with infertility just half way through its course, on page 152, and only the last 25 pages cover artificial insemination. Its greater part deals in a general way with regional anatomy, physiology, and the clinical examination of the cow and the bull. These latter two chapters are

among the best in the book; but they go into almost too much detail, including much on points of technique which were scarcely worth mentioning. The use of the suck tube is favoured to the extent of describing it as the sole method for collecting vaginal mucus, though a spoon is included in an equipment list. In the reviewer's experience, many cows yielding nothing thus give satisfactory samples upon digital stripping of the cervix. Also the method of case recording advocated does not allow for the desirability of easy correlation between observations made in the course of a series of clinical visits—a point which some feel to be one of the first importance. Nothing is said in the bull chapter about alternatives to the ordinary artificial vagina method for the collection of semen; the rectal massage method is not discussed either here or later. The authors do not like the use of a needle fixed to a storage receptacle for taking blood samples from bulls. They conclude that both sides of the tract may not always take part in the formation of one ejaculum. The account of sperm morphology is particularly good and that on motility is at all events adequate for the scope of the work. The system recommended for laboratory examination of semen includes the estimation of longevity on dilution, performance of the methylene blue reductase test, count by the method used for blood cells or by opacity comparator tubes. Very great value is attached to nigrosin-eosin staining methods in the estimation of percentage motility. The A.I. chapter is a good though brief general account taking cognizance of most of the recent advances, and including an interesting description of the use of a mechanical substitute for a teaser cow.

The chapters on infertility, general considerations, and genetic/developmental factors, are rambling, with a low content of hard fact. Some fifty pages later in another chapter the claim is made that the "Swedish condition" has been personally observed in both sexes of various British breeds. The known heritable seminal defects of British bulls are not in fact considered by their discoverers to show any close parallels to Lagerlöf's genetic defect in both sexes.

The notice given to brucellosis seems adequate and the trichomoniasis section, though without reference to the percentage incidence of the disease, otherwise decidedly competent. More detail might usefully have been given of cultural diagnosis methods, and the selection of individuals for attempts by the direct method. Genital tuberculosis is discussed at considerable length, as is, interestingly, infectious epididymitis and vaginitis. [Daubney *et al. V.B.* 9, p. 263.] Vibriosis is adequately described, but a little more detail might have been acceptable, especially on the use of infected bulls. The aspect of nutrition is discussed in four largely speculative pages. The recommendations of the chapter on general pathology of the female genital tract are in general rather behind modern practice and published post-war development. The consideration of functional infertility occupies 16 pages; the authors think clover oestrogens from pasture may well be concerned in the production of delayed ovulation. There is no further mention of the nutritional factor. The reviewer feels that an unnecessarily dismal view is taken about the prognosis of mummified foetus. He cannot agree that "pyometra post-conception differs little from pyometra post-partum either in causation or importance", his experience tallying with the published results of many authorities, *e.g.* Kostner, Meggio, Schaetz Andres, that the latter condition is far more grave.

The book is profusely illustrated, and many of the diagrams and photographs are helpful, but others seem quite pointless, e.g. the full-page diagram on p. 159 showing that the diploid chromosome number of the calf body cell is derived half from each parent. There are some unfortunate errors of grammar and wording, such as "in comparison to", p. 115, and "disinterested ", meaning uninterested, p. 82. Platitudes like "the chapters on semen take into consideration the data which are important for the assessment of this essential aspect of male fertility" tend to occur rather too often throughout the text.—F. L. M. Dawson.

Scanziani, P. (1952). 300 razze di cani. [**300 breeds of dog.**] pp. 171. Rome: Edizione Pan. L.1250. **2742**

This is a general account of the breeds of dogs. S. attempts to trace their origin from *Tomarctus,* and shows by means of tables how the modern breeds might have originated from three fossil varieties. He discusses conformation and classification of the breed characteristics. About a page is devoted to each of the 96 main breeds, a drawing accompanying each. The remaining varieties are briefly described.

—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

ALBEAUX-FERNET, M., BELLOT, L., DANEL, J., DERIBREUX, J., GÉLINET, M., LAUMONIER, R., RODMANI, J. D., ROBERT, J. & TRUET, J. (1952). L'année endocrinologique. [**Endocrinology.**] pp. 179. Paris: Masson et Cie. Fr. 815.

ALBIEN, W. (1952). Was gibt es Neues für den praktischen Tierarzt? Jahrbuch 1950/51. [**Matters of interest for the veterinary practitioner (1950-51).**] pp. 460. Hanover: Schlütersche Verlagsanstalt und Buchdruckerei. DM 14.00.

BLACKLOCK, D. B. & SOUTHWELL, T. Revised by: DAVEY, T. H. (1953). **A guide to human parasitology for medical practitioners.** pp. viii + 228. London: H. K. Lewis & Co. Ltd. 5th Edit. 25s.

BRANDLY, C. A. & JUNGHERR, E. L. [Edited by.] (1953). **Advances in veterinary science. Vol. I.** pp. 400. New York: Academic Press, Inc.; London: Academic Books Ltd. $9.00.

CARTER, C. W. & THOMPSON, R. H. S. (1953). **Biochemistry in relation to medicine.** pp. xi + 524. London: Longmans, Green & Co. 2nd Edit. 30s.

CONN, H. J. (1953). **Biological stains. A handbook on the nature and uses of the dyes employed in the biological laboratory.** pp. 367. Geneva, N.Y., U.S.A.: Biotech Publications. 6th Edit. 40s.

DANIELLI, J. F. (1953). **Cytochemistry: a critical approach.** pp. 139. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 32s.

DENZLER, B. (1950). Tiergesundheitslehre. Ein Leitfaden für den Unterricht an landwirtschaftlichen Berufs- und Landwirtschaftsschulen. [**Animal health.**] pp. 81. Stuttgart: Eugen Ulmer. DM 1.60.

EPHRUSSI, B. (1953). **Nucleo-cytoplasmic relations in micro-organisms: their bearing on cell heredity and differentiation. Being the William Withering Memorial Lectures delivered at the Birmingham Medical School, 1952.** pp. vii + 127. London: Geoffrey Cumberlege, Oxford University Press. 18s.

FISHER, R. A. & YATES, F. (1953). **Statistical tables for biological, agricultural and medical research.** pp. xi + 126. Edinburgh & London: Oliver & Boyd. 4th Edit., revised and enlarged. 21s.

VON FOERSTER, H. [Edited by.] (1953). **Cybernetics. Circular causal and feedback mechanisms in biological and social systems. Transactions of the Ninth Conference March 20-21, 1952, New York, N.Y.** pp. xx + 184. New York: Josiah Macy, Jr. Foundation. $4.00.

JAHN, W. (1952). Penicillin und andere Antibiotica in der Tiermedizin. [**Penicillin and other antibiotics in veterinary medicine.**] pp. 172. Konstanz: Terra-Verlag; London: Baillière, Tindall & Cox. DM 12.80.

KÖNIG, R. & HONEKER, A. (1951). Die Krankheiten der Ziege. Heft II. Die Krankheiten des Geschlechtsapparates der Ziege. A. Die Krankheiten der männlichen Ziege. B. Störungen der Fruchtbarkeit der weiblichen Ziege. C. Die Zwitterbildung und deren Erkennung beim Ziegenlamm. [**Diseases of the genital system of the goat.**] pp. 99. Dortmund: Verlag für Kleintierzucht, H. Wellershaus.

LAWRENCE, J. S. & FRANCIS, J. (1953). **The sulphonamides and antibiotics in man and animals.** pp. xii + 482. London: H. K. Lewis & Co. Ltd. 2nd Edit. 42s.

LENKEIT, W. (1953). Einführung in die Ernährungsphysiologie der Haustiere. [**The physiology of nutrition in domestic animals.**] pp. vii + 266. Stuttgart: Ferdinand Enke. DM 24 & DM 26.

MCCARRISON, R. & SINCLAIR, H. M. (1953). **Nutrition and health, being the Lectures delivered before the Royal Society of Arts 1936 together with two earlier essays.** pp. 125. London: Faber & Faber. 12s. 6d.

MCELROY, W. D. & GLASS, B. [Edited by.] (1952). **Phosphorus metabolism. A symposium on the role of phosphorus in the metabolism of plants and animals. Vol. II. Sponsored by the McCollum-Pratt Institute of the Johns Hopkins University.** pp. xv +

930. Baltimore: The Johns Hopkins Press; London: Geoffrey Cumberlege, Oxford University Press.

MOULTON, F. R. [Edited by.] (1948). **The rickettsial diseases of man. A symposium on the rickettsial diseases of man, organized by the Section on Medical Sciences of the A.A.A.S. and presented at the Boston Meeting on December 26-28, 1946.** pp. 247. Washington, D.C.: American Association for the Advancement of Science. $6.25.

MOZLEY, A. (1953). **A background for the prevention of bilharzia.** pp. viii + 72. London: H. K. Lewis & Co. Ltd. 9s.

DE MUYLDER, C. G. (1952). **The "neurility" of the kidney: a monograph on nerve supply to the kidney.** pp. xiv + 80. Oxford: Blackwell Scientific Publications; Springfield, Ill.: Charles C. Thomas. Toronto: The Ryerson Press. 25s.

NIELSEN, J. (1950). Arvelig lamhed hos kalve. Undersøgelser over medfødt arvelig lamhed i baglemmerne hos kalve av Rød Danske malkerace. **[Inherited paraplegia in Danish calves. Studies on congenital posterior paralysis of Danish Red dairy calves.]** pp. 173. Copenhagen: Det Danske Forlag.

PARRY, S. C. (1953). **Polyglot medical questionnaire in twelve languages with digital system of communication.** pp. 62. London: H. K. Lewis & Co. Ltd. 12s. 6d.

PINCUS, G. [Edited by.] (1953). **Recent progress in hormone research. The Proceedings of the Laurentian Hormone Conference. Vol. VIII.** pp. 603. New York: Academic Press, Inc.; London: Academic Book Ltd. $10.80.

RALLI, E. P. [Edited by.] (1953). **Adrenal cortex. Transactions of the Fourth Conference, November 12, 13 and 14, 1952** [Sponsored by the Josiah Macy, Jr. Foundation, New York.] pp. 165. New York: Josiah Macy, Jr. Foundation. $3.50.

REEVE, E. C. R. & WADDINGTON, C. H. [Edited by.] (1952). **Quantitative inheritance. Papers read at a colloquium held at the Institute of Animal Genetics Edinburgh University under the auspices of the Agricultural Research Council April 4th to 6th, 1950.** pp. 151. Agricultural Research Council; London: H.M. Stat. Off. 20s.

SACHS, W. B. (1952). Praktische Tierpflege für Naturfreunde und Forscher.—Haltung und Zucht der für Laboratorien und Tierfreunde ausgewählten Tierarten. **[Breeding and management of laboratory animals.]** pp. 106. Stuttgart: Franckh'sche Verlagsbuchhandlung. DM 4.80.

SACKS, J. (1953). **Isotopic tracers in biochemistry and physiology.** pp. vii + 383. New York, Toronto & London: McGraw-Hill Book Co, Inc. 68s.

STEINIGER, F. (1952). Rattenbiologie und Rattenbekämpfung einschliesslich der Toxikologie gebräuchlicher Rattengifte. Vol. VII. **[Biology and control of rats, including toxicology of some rat poisons.]** pp. 149. Stuttgart: Ferdinand Enke. DM 11.

STEMMER, W. (1953). Die Elemente des Psychischen. Ein Beitrag zur allgemeinen Seelenkunde und zur psychosomatischen Medizin auf Grund einer vergleichenden Psychologie des Menschen und der Tiere. **[Elements of psychology.]** pp. 227. Stuttgart: Hippokrates-Verlag Marquardt & Cie. DM 18.50.

WEICHERT, C. K. (1953). **Elements of chordate anatomy.** pp. vii + 451. New York, Toronto & London: McGraw-Hill Book Co., Inc. $5.50 or 44s.

WILSON, E. B. JR. (1952). **An introduction to scientific research.** pp. xiii + 375. New York, Toronto & London: McGraw-Hill Book Co., Inc. $6.00.

WOLSTENHOLME, G. E. W. [Edited by] (1953). Ciba Foundation. Colloquia on endocrinology. Vol. VI. Hormonal factors in carbohydrate metabolism. pp. xiv + 350. London: J. & A. Churchill. 35s.

ANON. (1953). Lectures on the scientific basis of medicine. Vol. I, 1951-52. Delivered to the British Postgraduate Medical Federation. pp. viii + 396. London: University of London, The Athlone Press. 30s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey

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List of Abbreviations

A.I. — artificial insemination
ant. — anterior
A.P.F. — animal protein factor
approx. — approximately
aq. — aqueous
av. — average

B.A.L. — British anti Lewisite (2,3 dimercaptopropanol)
b.p. — boiling point

c.f. — complement fixation
clin. — clinical
coeff. — coefficient
conc. — concentration
c.s.f. — cerebrospinal fluid

diam. — diameter
dil. — dilute(d)

E.I.A. — equine infectious anaemia
equiv. — equivalent

ft. — foot (feet) [measurement only]

Hb. — haemoglobin
H.I. — haemagglutination inhibition

inj. — injection(s)
insol. — insoluble
Inst. (inst) — Institute
i/m — intramuscular(ly)
i/p — intraperitoneal(ly)
i/v — intravenous(ly)
i/d — intradermal(ly)

lab. — laboratory (-ories)

max. — maximum (-al)

N.D.V. — Newcastle disease virus
N.D. — Newcastle disease

r.b.c. — red blood corpuscles
r.e.s. — reticuloendothelial system
R.H. — relative humidity

s/c — subcutaneous(ly)
soln. — solution
suppl. — supplement(s) (-ary)
std. — standard

temp. — temperature
therap. — therapeutic

U.V. — ultra-violet

vet. — veterinary
vol. — volume

w.b.c. — white blood corpuscles
wt. — weight

/ — per (*e.g.* wt./vol mg./lb. body wt.)

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius,* where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius,* being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin.*

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin.*

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